DanTaet System WLP-1

User manual

DANTAET a/s

Højmevej 36-38
DK-5250 Odense SV
Ph. +45 63 17 45 00
Fax +45 63 17 45 01

Program 101105 func.spec. 070707

Table of contents:

Table of contents: **2**

Installation **5**

Plumbing **6**
Meters **6**
Cutoff valve **6**
Filter **6**

Electrical Installation **7**
Relay Outputs **7**
Alarm Outputs 7
Valve Outputs 7
Low-Level Input/Output **7**
Digital outputs 7
Digital Inputs (Remote Control) 8
Selectable functions 8
Meter Inputs 9

System Startup **10**

Operation **11**

Leakage monitoring, abstract **12**
Monitoring Functions **12**
Temporary modification of monitoring **14**
Calendar Function 14
Monitor Suppression 14

Operating the WLP-1 computer **15**
LED Spec. Mon **18**
Alarm Condition **19**

Menu system, access and operation **21**
User profiles **21**
Login and Logout **22**
Root Window selection **22**
Root Window Particulars **23**
Status/date 23
System/version info 23
Liquid Sensor status 23
System uptime 24
Modem Line Status 24
Function groups **25**
Set Flow Meter IRPT 25
Set Tightness Check 26
Output Response 27
Dialup Response 28
System test 30
User options **30**
Setting Menu timeout 30
Setting Password timeout 30
Setting help text display time 30
Setting key tick 31
Setting key error sound 31
Setting key repeat rate 31

System setup ***32***
Language select *33*
Set clock *33*
Daylight savings time *33*
Set LCD-display *33*
Set delegation. *34*
Set Liquid Sensors *34*
View Power Supply *35*
Text editor *35*
Text Alarm Message *36*
Dialup Settings *37*
SMS Pool Settings *38*
Calendar *39*
Valve Association (Liquid Sensor) *40*
Monitor warning *40*
Monitor Run-In *41*
Run-In part 1: "High phase" *41*
High Phase start time *42*
Run-In part 2: "Selection mask" *43*
Run-In part 3: "Time" *43*
Run-in addendum: *44*
Monitor Rationing *44*
Monitor Limit *45*
Idle Period Test Time *45*
Idle Warning Expect *45*
Minimum Idle Period *46*
Idle Period Tolerance *46*
Constance reset level *46*
L: Max Constance *46*
L: Discharge Zerotime *47*
L: Max Discharge *47*
L: Minimum Flow Limit *47*
L: Average Flow Limit *47*
L: Peak Flow Limit *48*
L: Peak Flow Duration *48*
H: Max Constance *48*
H: Discharge Zerotime *48*
H: Max Discharge *49*
H: Minimum Flow Limit *49*
H: Average Flow Limit *49*
H: Peak Flow Limit *49*
H: Peak Flow Duration *50*
Monitor Suppression *50*
Service menu *50*
Set new User password *50*
Read/zero meter subtotal *51*
Add new Liquid Sensor *51*
Change password ***52***
View log ***52***
Service log. *52*
Event log. *52*

Tips for system configuration ***53***
Run-in ***53***
Run-In part 1: "High phase" *53*
High Phase start time *54*
Run-In part 2: "Selection mask" *55*

Run-In part 3: "Time" *55*
Run-in addendum: *56*
Telecommunication ***57***
Dialup Settings *57*
Text Editor *58*
Dialup Response *59*
Appendix ***61***

Installation

Plumbing

The following installation diagrams are enclosed with this manual:

Dwg. no. 404149 Installation diagram WLP-1, Multi-jet meters.
Dwg. no. 404148 Installation diagram WLP-1, Woltman meters.

Meters, valves and other ancillary equipment is mounted in the pipe installation as shown in the enclosed installation diagrams.
Beware that valves and meters in particular are sensitive to impurities in the installation.
The use of filters directly upstream of meters and valves prolong their lifetime considerably, and is always recommended. Blocked meters, and valve defects arising from dirt and impurities in the installation are void of warranty.

Meters

Multi-jet turbine meters and Woltman meters must be installed horizontally except when the model is specifically for vertical installation (ordered separately against an additional cost).

For reasons of measuring accuracy, turbulence and cavitation near the meters should be avoided. Sections of straight pipe either side of the meters should be inserted as per the enclosed diagrams.
A change of aperture near a flow meter should be achieved by inserting a conical pipe section.

Cutoff valve

The cutoff valve does not require any particular orientation. However, hanging the actuator below the pipe is not permissible owing to the risk of condensation and seepage.

Filter

The use of filters upstream of meters and valves is always recommended. Filters are not included with the system.

Electrical Installation

The following installation diagrams are enclosed with this manual:

Dwg. no. 404147 Electrical Installation

Relay Outputs

Alarm Outputs

Four alarm outputs are provided. All relays are energized in the normal condition.

Alarm relay J38:	*Max. 24Vac*	*NC-COM-NO*	*Man-on-the-spot*
Alarm relay J39:	*Max. 24Vac*	*NC-COM-NO*	*Leakage Warning*
Alarm relay J40:	*Max. 24Vac*	*NC-COM-NO*	*Leakage Alarm*
Alarm relay J42:	*Max. 230Vac*	*NC-COM-NO*	*System Alarm*

Leakage warning is given while any monitored value exceeds the warning limit as set in ***Monitor Warning****. This may indicate an impending alarm.*

Valve Outputs

Seven SPDT relays are provided for valve actuation.

SPDT relay J32:	*24Vac*	*Cutoff Valve Relay 1*
SPDT relay J33:	*24Vac*	*Cutoff Valve Relay 2*
SPDT relay J34:	*24Vac*	*Cutoff Valve Relay 3*
SPDT relay J35:	*24Vac*	*Cutoff Valve Relay 4*
SPDT relay J36:	*24Vac*	*Drain Valve Relay*
SPDT relay J37:	*230Vac*	*Cutoff Valve Relay 6*
SPDT relay J44:	*230Vac*	*Cutoff Valve Relay 7*

Low-Level Input/Output

Digital outputs

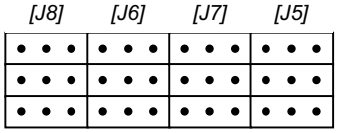
Six optoisolated digital outputs are provided:

Output J13:	*Max. 24Vdc, 100mA*	*Flow impulses meter channel1*
Output J14:	*Max. 24Vdc, 100mA*	*Flow impulses meter channel 2*
Output J15:	*Max. 24Vdc, 100mA*	*Flow impulses meter channel 3*
Output J16:	*Max. 24Vdc, 100mA*	*Flow impulses meter channel 4*
Output *J18:*	*Max. 24Vdc, 100mA*	*Leakage monitor suppression active*
Output J20:	*Max. 24Vdc, 100mA*	*Tightness check in progress.*

Digital Inputs (Remote Control)

Four digital inputs are provided:
Input J5: Max. signal 24Vdc
Input J6: Max. signal 24Vdc
Input J7: Max. signal 24Vdc
Input J8: Max. signal 24Vdc

Digital input active/passive mode is configured by jumpers on the main i/o board:



Open collector or electromechanical switch.

External voltage drive 12-24Vdc

Selectable functions

Alarm Reset: (res) — *Alarm is reset when switch closes input. To reset further alarms, the switch must be reopened first. Note that Liquid Sensor alarms can not be reset by this means.*

Valve Cutoff: (vcl) — *Cutoff valves will close when switch closes input. Valves reopen (unless meanwhile closed by other means) when switch is opened.*

Suppression: (sup) — *Activating this input causes suppression of leakage monitor. Deactivating the input restarts the suppressed monitors. Only leakage monitors are suppressed, liquid monitors remain active. Suppression is configured in* ***Factory Settings - Monitor Setup – Suppression Mode****.*

Phase Switch: (key) — *External signal governs high/low consumption phase selecion. Configured in* ***Factory Settings - Monitor Setup – Phase Mode****.*

Selected input functions can be inspected in ***Factory Settings - Digital Input Matrix****. Input function selection may only be changed by DanTaet.*

Analog Inputs 4-20 mA.

*Eight general-purpose analog inputs are provided for e.g.***liquid sensors LS-X***.*

Input J21:	*–|+*	*Analog channel 1*
Input J22:	*–|+*	*Analog channel 2*
Input J23:	*–|+*	*Analog channel 3*
Input J24:	*–|+*	*Analog channel 4*
Input J25:	*–|+*	*Analog channel 5*
Input J26:	*–|+*	*Analog channel 6*
Input J27:	*–|+*	*Analog channel 7*
Input J28:	*–|+*	*Analog channel 8*

Meter Inputs

Four meter inputs are provided.

Meter Input J1:	*Meter*	*+12V*	
		GND	
		Signal1	*=Meter/Monitor 1*
		Signal2	*=Meter/Monitor 2*
Meter Input J2:	*Meter*	*+12V*	
		GND	
		Signal3	*=Meter/Monitor 3*
		Signal4	*=Meter/Monitor 4*

System Startup

The Leakage Protection System is factory preset with standard monitoring parameters. An automatic run-in and subsequent parameter evaluation should be performed to adapt the system to consumption pattern of the actual installation.

The Leakage Protection System must be fully installed and ready for service, and the installation must be in normal use prior to commencing an automatic run-in.

In order to perform a meaningful run-in, a prior notion of high- and low-consumption periods is helpful. Please clarify this before commencing run-in.
Also, it is important that the installation is known to be free of leaks while run-in is performed. Any leakage, such as e.g. faulty toilets or taps will adversely influence the run-in and set an excessive permissible background flow.

Operation

Leakage monitoring, abstract

System WLP-1 continuously monitors the installation for exceptional events, i.e. flow or consumption deviating from normal values. When flow or consumption deviates sufficiently from the normal values, the system will issue an alarm and cut off the installation if a cutoff valve is attached to the system.

System WLP-1 issues an alarm when the water consumption is abnormal. In order to have relevant alarm limits, the system must know the installation's normal water consumption, including high and low consumption phase switchover times.
High and Low consumption phases are determined as follows:

High phase: *Time during which high water consumptionmust be expected, like e.g. during normal working hours, or in the presence of several persons.*

Low phase: *Time during which low water consumption must be expected, like e.g. during closing hours, or in the presence of no or few people, and possibly in weekends.*

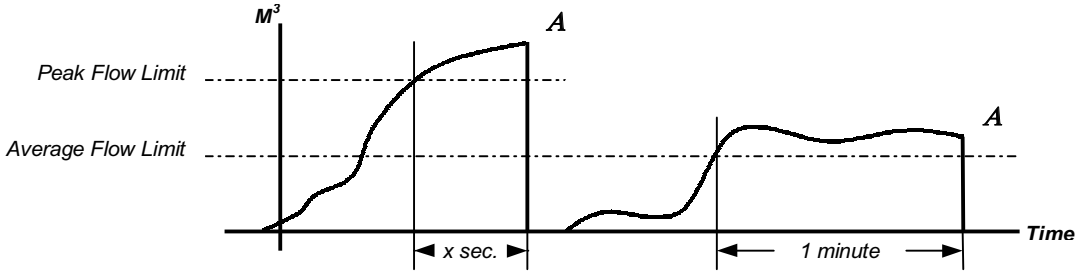
System WLP-1 switches between High and Low phases from clock settings entered into a timer. However, an external switch may also be used to govern High/Low phase switching. This can be put to pratical use when system WLP-1 is switched along with a burglar alarm. When the burglar alarm is armed, system WLP-1 will switch to Low phase, and when the burglar alarm is disarmed, system WLP-1 will switch to High phase.

To ensure optimum performance, a run-in must be performed by the WLP-1 when first installed. During run-in, system WLP-1 will establish the normal water consumption in the installation during High and Low phases. When run-in is complete, the system will calculate new alarm limits and automatically switch to leakage monitoring mode.

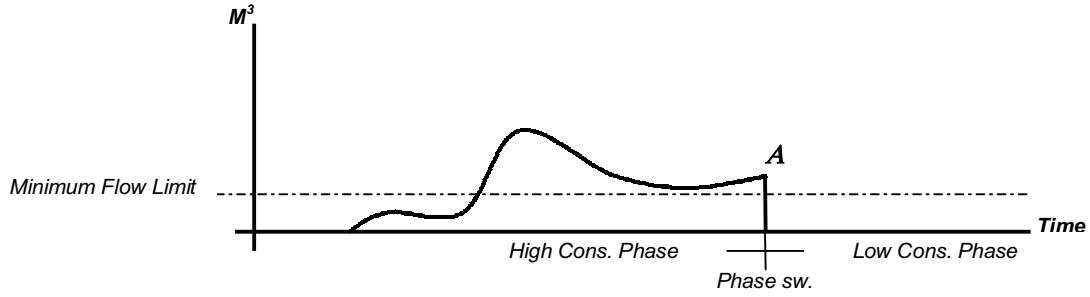
Monitoring Functions

Leakage Monitoring comprises six mechanisms used in High and Low consumption phases:

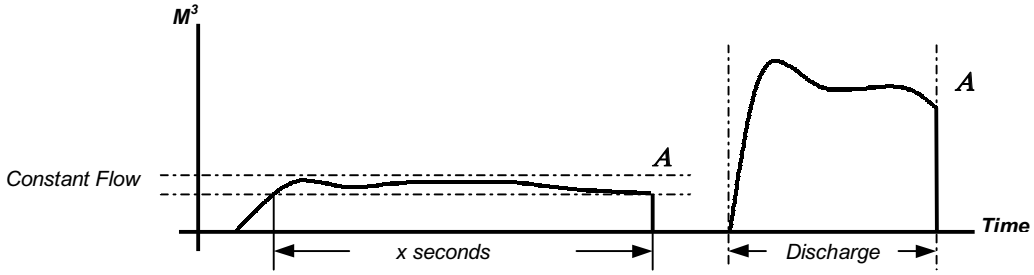
Peak Flow = High-value flow of water permissible for a short duration only.
Average Flow = Mean-value flow of water permissible for one minute.



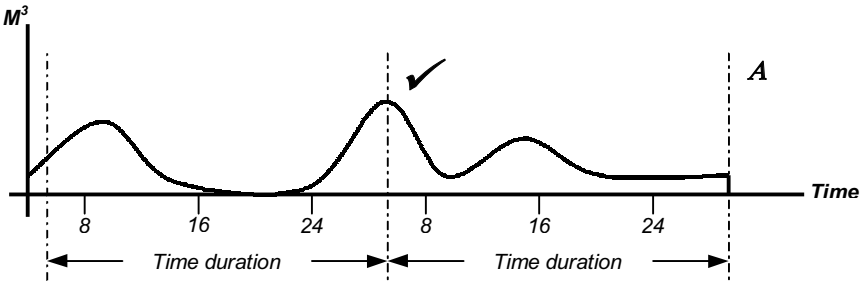
Minimum Flow= Low-value limit which must be undercut by actual flow sometime before next Low->High or High->Low phase change.



Constance = Maximum permissible duration of aninvariant flow.
Discharge = Maximum permissible volume of a continuous discharge.



Idle Period = No-consumption period of a preselected minimum duration.



In addition to monitoring the installation with these six functions, the WLP-1 can ration daily water consumption, i.e. allocate a certain volume per day. If the daily limit is reached, the WLP-1 will issue an alarm and cut off the installation. This function is disabled by default, but may be enabled if daily rationing is required.

Temporary modification of monitoring

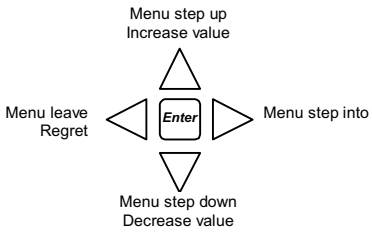
Normally, the alarm limits will apply as they are, but at times a modification is suitable, e.g. during vacations, or in connection with extraordinary events. There are two ways to temporarily modify monitoring:

Calendar Function

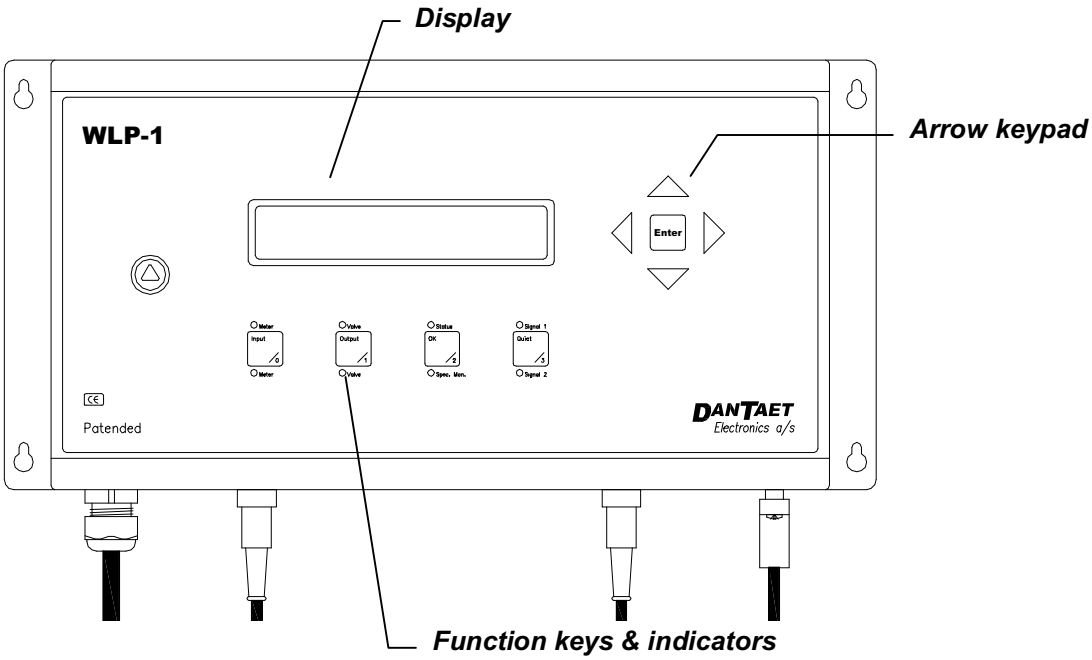
To accomodate events during which the normal alarm limits are inapplicable, monitoring may be adapted to the event for its duration in the menu ***System Settings – Calendar****.*
By entering date/time for start and end of the event, the monitor is forced to use either Low Phase, High Phase, 2x High Phase, or 3x High Phase alarm limits during the event.

Monitor Suppression

If the discharge of extraordinary amounts of water is required, e.g. when filling a swimming pool, or testing fire hoses, the entire monitor may be temporarily suppressed from the menu ***System Settings – Monitor Suppression****.*
From this menu is entered the time duration of monitor suppression. This requires caution, since the installation will be unmonitored for the duration, i.e. the duration should be made as short as possible, and should not extend into periods where the installation is without supervision.
Note that system errors and rationing may not be suppressed.



Operating the WLP-1 computer

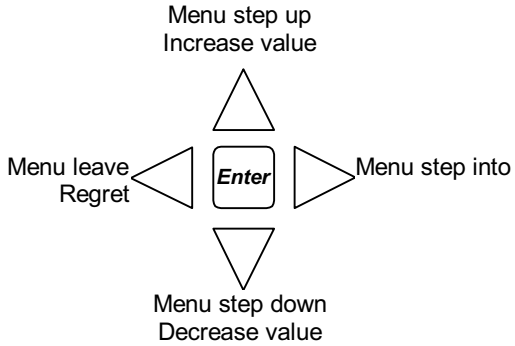


The WLP-1 computer is operated from the front panel using a 4x40 character display, an arrow keypad and four function keys with two three-color LED indicators each.

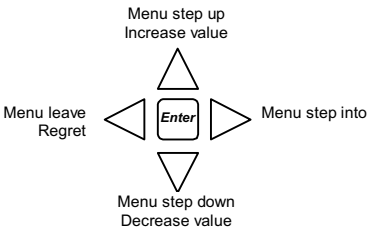
The WLP-1 computer is operated via a menu system which displays available parameters. The menu system embodies a hierarchy of users of different privilege as follows:

1. ***DanTaet*** *Factory personnel = no restrictions*
2. ***Superuser*** *System supervisor = highest privilege*
3. ***Administrator*** *Administrative staff = high privilege*
4. ***Operator*** *Daily user = less privilege*
5. ***Anybody*** *Passersby = no privilege*

Anyone may inspect individual menu items and their related parameters.
Privilege to change parameters or acknowledge alarmes is delegated to the individual user, and access hereto is subject to providing a valid password.
User privilege may be redelegated to or revoked from users lower in the hierarchy if desired.

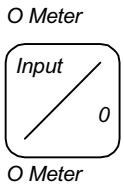


The menu system is navigated using the arrow keypad.



Function Keys and Indicators

The front panel features 4 function keys with associated three-colour LED indicators.

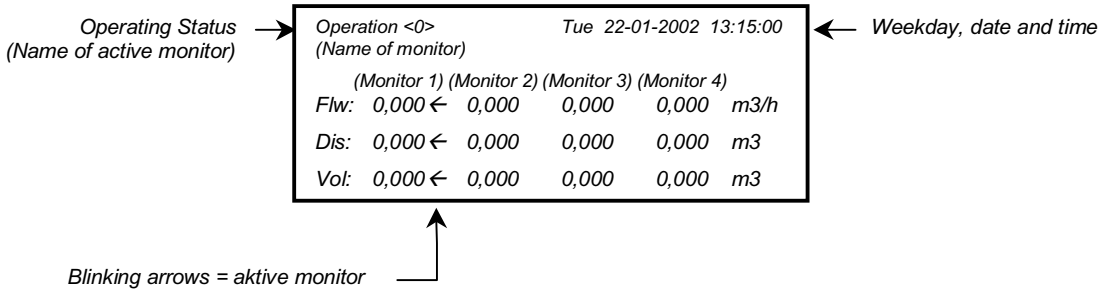


LEDs: Meter

Green flash indicates a meter impulse.
If several meters are attached, flashes may also be red depending on which meter issued an impulse.
If impulses coincide, the resulting flash mey appear yellow.

Key Input

Pressing this key invokes a status image of all configured monitors (or all monitor if UserID is DanTaet), showing actual values for instantaneous flow, discharge and consumption total.


Operating Status
(Name of active monitor)
Operation <0>
(Name of monitor)
Tue 22-01-2002 13:15:00
Weekday, date and time
(Monitor 1) (Monitor 2) (Monitor 3) (Monitor 4)
Flw: 0,000 ← 0,000 0,000 0,000 m3/h
Dis: 0,000 ← 0,000 0,000 0,000 m3
Vol: 0,000 ← 0,000 0,000 0,000 m3
Blinking arrows = aktive monitor

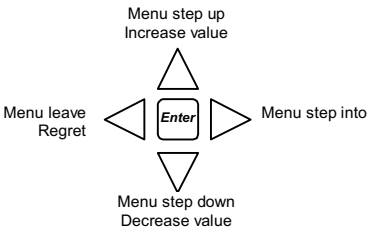
The selected monitor is indicated by blinking arrows after the monitor data. Pressing the function key once will briefly display the name of the selected monitor in the topmost display text line (i.e. the monitor to which the indicated status applies).

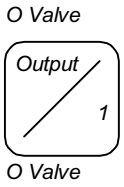
Several keypresses in rapid succession changes the monitor selection, and the indicators will move sideways to the next column, while the relevant monitor name is briefly displayed in the topmost display text line.

Flw = Actual Instantaneous Flow.

Dis = Volume of ongoing discharge.

Vol = Total consumption counter.





LEDs: Valve

This indicator works only if the system includes cutoff valves.
If one valve only is attached, only the topmost indicator is used.
If UserID is DanTaet, indicators are active, valves or no valves.

Upper LED displays status of valve attached to the selected monitor.
Flash code

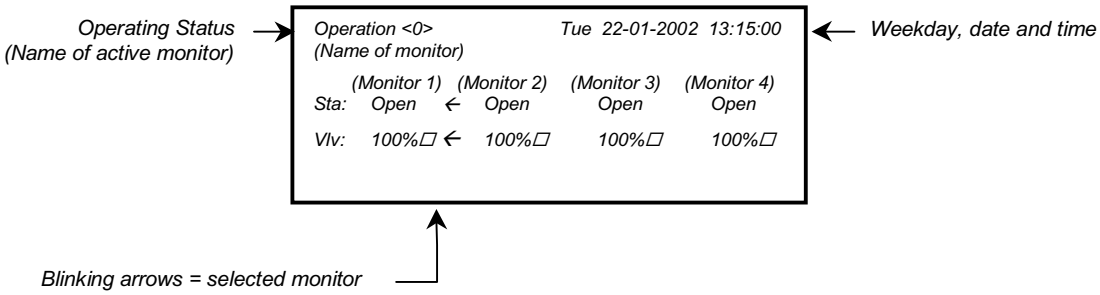
Open	Closed	Closing	Opening
Green	Red	Red	Green
Green	Red	Off	Off

Lower LED displays status of all valves.
Flash code

No valve is closed				At least one valve is closed			
Open	Opening	Closing	Opening+ Closing	Closed	Opening	Closing	Opening+ Closing
Green	Green	Red	Yellow	Red	Red	Red	Red
Green	Off	Off	Off	Red	Green	Yellow	Green
Green	Green	Red	Yellow	Red	Red	Red	Red
Green	Off	Off	Off	Red	Green	Yellow	Yellow

Key Output

Pressing this key invokes a status image showing cutoff valve state of the configured monitors (or all monitors if UsedID=DanTaet).

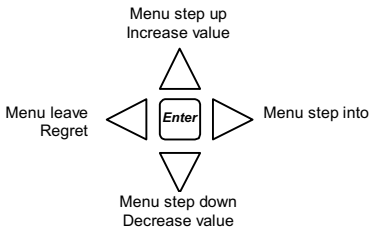

Operating Status
(Name of active monitor)
Operation <0>
(Name of monitor)
Tue 22-01-2002 13:15:00
Weekday, date and time
(Monitor 1) (Monitor 2) (Monitor 3) (Monitor 4)
Sta: Open Open Open Open
Vlv: 100% 100% 100% 100%
Blinking arrows = selected monitor

The selected monitor is indicated by blinking arrows after the monitor data. Pressing the function key once will briefly display the name of the selected monitor in the topmost display text line (i.e. the monitor to which the indicated status applies).

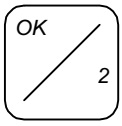
Several keypresses in rapid succession changes the monitor selection, and the indicators will move sideways to the next column, while the relevant monitor name is briefly displayed in the topmost display text line.

Cutoff valve of the selected monitor may be manually operated using the ▽△ keys, provided the user has the necessary privilege.

Note that any drain valve is unaffected by manual valve control. Closing a cutoff valve activates the valve tightness monitor.



O Status



O Spec. Mon

LED Status

Flash code

Everything OK	Warning	Alarm + buzzer	Alarm. Buzzer muted
Green	Yellow	Red	Red
Green	Yellow	Red	Off

LED Spec. Mon

Flash code

Tightness Check in progress	Run-in in progress	Monitor suppression active	Tightn. Check Run-in	Run-in Mon. Suppress.	Tightn. Check Run-in Mon. Suppress.
Green	Yellow	Red	Green	Yellow	Green
Off	Off	Off	Yellow	Red	Yellow
					Red

Key OK

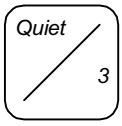
Two different displays are possible:

In the normal condition:
Pressing this key invokes a status window displaying active monitors and system status. Monitor status may be further specified:

Suppression [User] = Monitor Suppressed by User
Suppress.[Aut/Ext] = Monitor Suppressed by Timer (Aut) or by External Signal (Ext)
Operation [H] = High Phase
Operation [L] = Low Phase
Operation [2] = 2 x High Phase
Operation [3] = 3 x High Phase
Operation [RI] = Run-In
Operation [W] = Warning, monitor near alarm limit.

In the alarm condition:
Pressing this key invokes the active alarm list. Pressing the key again acknowledges the alarm displayed. If multiple alarms were active, the next alarm ending acknowledgement will be displayed a.s.o. until all alarms are acknowledged.

O Signal 1



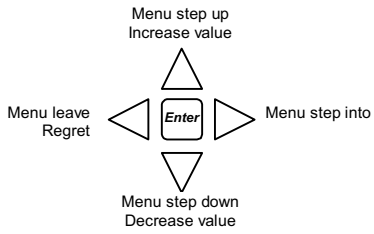
O Signal 2

LEDs: Signal 1 and Signal 2

Flash during remote communication.
Signal 1: Green = Rx Com2
Red = Rx Com1
Signal 2: Green = Tx Com2
Red = Tx Com1

Key Quiet

Pressing this key mutes the buzzer in the alarm condition.



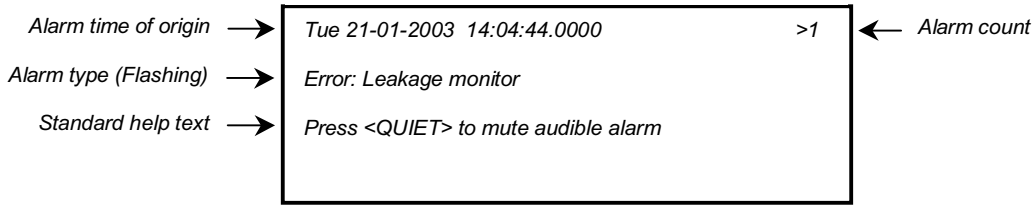
Alarm Condition

Five separate alarm types exist:

- *Leakage alarm*
- *Tightness Check alarm*
- *Power Supply alarm*
- *System Error alarm*
- *Liquid Sensor alarm*

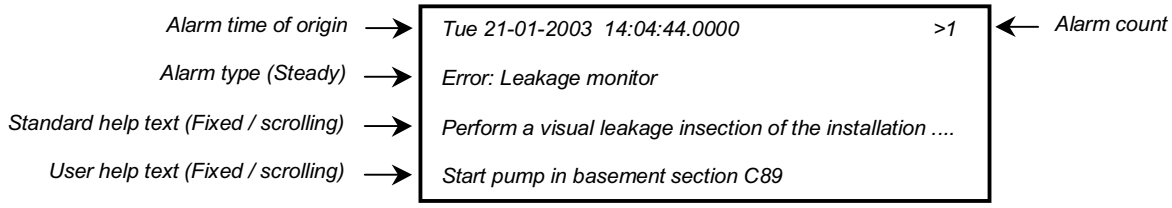
All of these are indicated audibly using the buzzer, and visibly by a red light in the Status indicator above the OK key. Also, the alarm list display is brought to the foreground which briefly explains the nature of the alarm and which action is required.

Alarm display 1



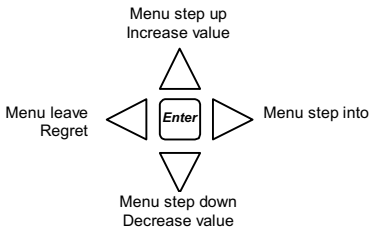
First mute the buzzer. This goes for all alarm types, and is done by pressing QUIET. The sound is muted, the Status LED above the OK key will start flashing red, and a new alarm display appears describing in plaintext what is needed to acknowledge the alarm.

Alarm display 2


Alarm time of origin
Alarm type (Steady)
Standard help text (Fixed / scrolling)
User help text (Fixed / scrolling)
Tue 21-01-2003 14:04:44.0000 >1
Error: Leakage monitor
Perform a visual leakage insection of the installation ....
Start pump in basement section C89
Alarm count

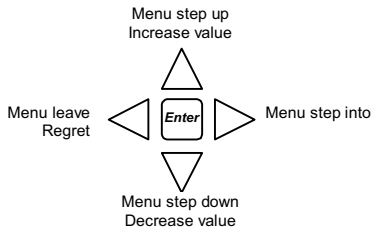
Note that more than one alarm can be present concurrently. The alarm count is shown in the upper right hand corner of the display.
The display always shows the most recent alarm; only when this is acknowledged will any previous alarm reappear. If desired, DanTaet can change your setup (on-site, or by remote control if your system has a modem) to make the alarm list browseable.

A user help text may be added for each alarm type. This may be useful in cases where particular action is required in case of alarm, e.g. the starting of a pump.
For a description of how to add a user help text, please refer to the section ***System Settings - Text alarm message****.*



The WLP-1 computer is equipped with 4 alarm relays. They are assigned by default as shown below, but all may be reconfigured from the menu
***Function groups – Alarm relay function**.*
All alarm relays are fail-safe (energized in the normal condition).

Signal relay J38	*Man-on-the-spot. Deasserts when Quiet or Reset key is activated following an alarm. Asserts on any type alarm.*
Signal relay J39	*Warning relay. Indicates a monitor is approaching its alarm limit.*
Signal relay J40	*Leakage alarm.* *Signals any leakage or liquid sensor alarm*
Signal relay J42	*System and Power Failure alarm.* *Signal alarm caused by System, Meter, Valve or Power Supply error.*



Menu system, access and operation

User profiles

The menu system employs a hierarchy of users with different privilege. The following identities exist:

	User		***Default password***
1.	*DanTaet*	*(Factory personnel)*	*undisclosed*
2.	*Superuser*	*(System supervisor)*	*00112233*
3.	*Administrator*	*(Administrative staff)*	*123123*
4.	*Operator*	*(Daily user)*	*1111*
5.	*Anybody*	*(passers-by)*	*-*

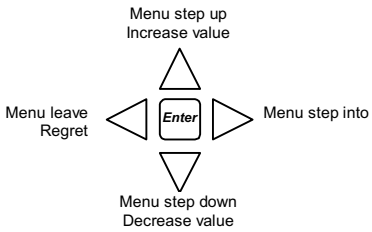
Each user is endowed with different system operation privileges. Any privileged user may use the menu Set Delegation to re-delegate any of his own privileges to users below him in the hierarchy.

User privileges are factory preset as follows:
← Administrator has high privilege and may acknowledge alarms.
← Operator has low privilege and may acknowledge alarms.
← Anybody has no privilege and may only peek into the various menus.

System factory configuration includes default passwords Administrator and Operator.

Important!
Change your password the first time you log in to prevent anyone using the default passwords from logging in and making changes to the system.

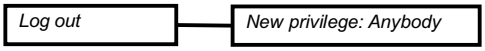
This manual contains description, guides and explanation for most menu items and parameters.
Items and parameters only sparsely covered by this manual are best left alone and should not be modified without prior consultation of the factory R&D department.



Login and Logout

Type password using the digit keys below the display, terminate with ENTER.
Each password digit is in the range 0 to 3.

Access is denied if wrong password is given. After three unsuccessful attempts, login will be blocked for one minute by the WLP-2 computer.



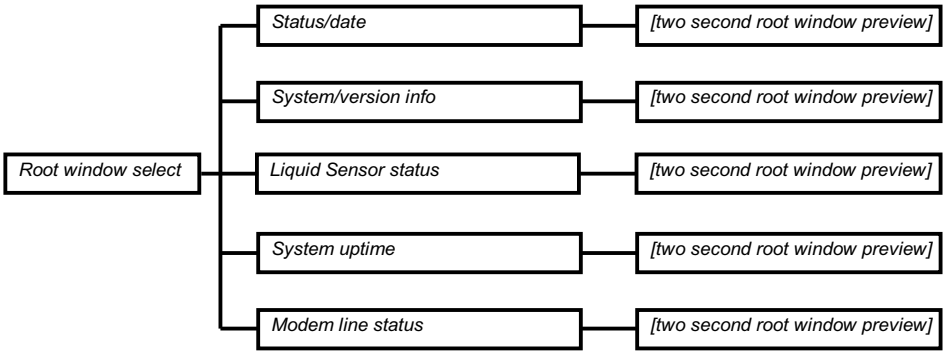
Log out is done via the menu item, or automatically after an inactivity timeout, the value of which is set in User Settings - Password Timeout.

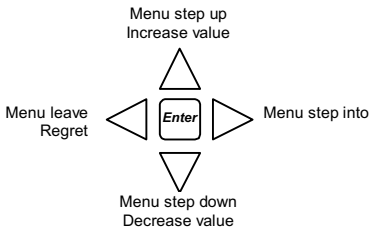
Root Window selection

n the normal condition, the WLP-computer displays a Root Window.
The root window is selectable in the menu item Root window select.

To select a root window, place the cursor on the description of the desired window and press ENTER.

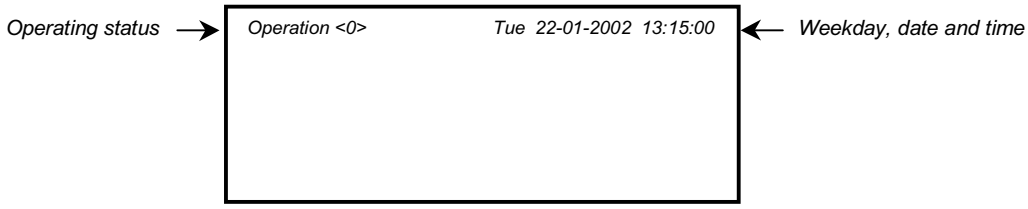
The root window may be previewed briefly by pressing key ▷





Root Window Particulars

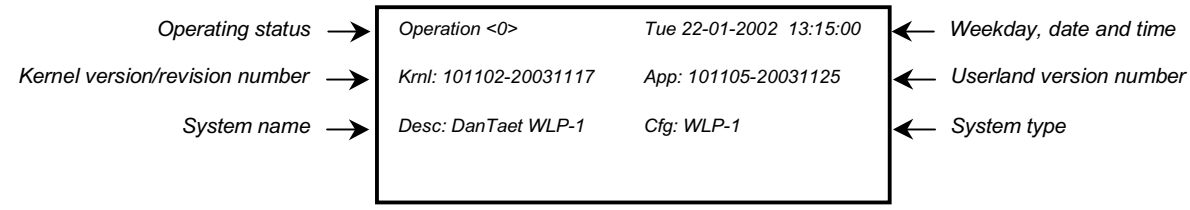
Status/date



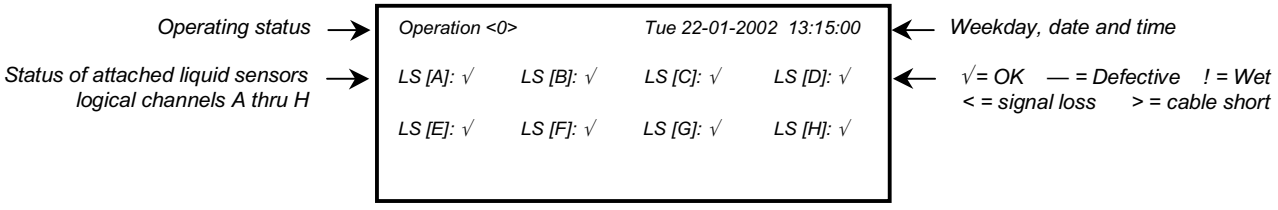
Operating Status codes
<0> OK (valve open)
<W> Liquid Sensor error
<E> Valve exercise
<X> External switch
<C> Remote Communcation
<M> Valve closed manually
<R> Rationing
<L> Leakage alarm
<S> System error
<P> Power Supply error

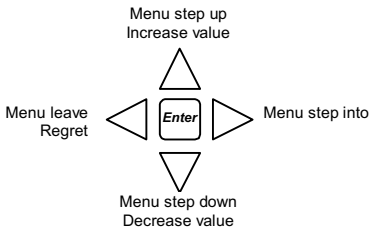
The Operating Status codes appear in all root windows.

System/version info

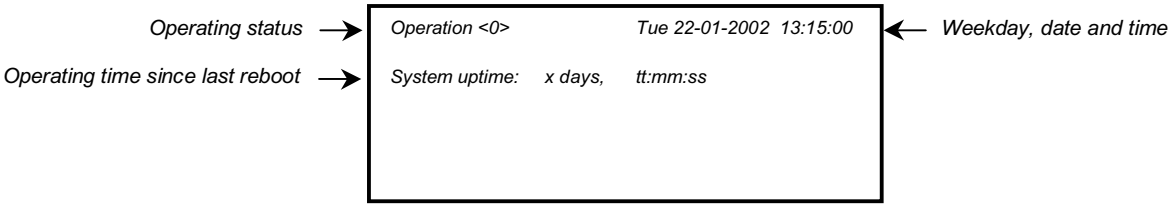


Liquid Sensor status

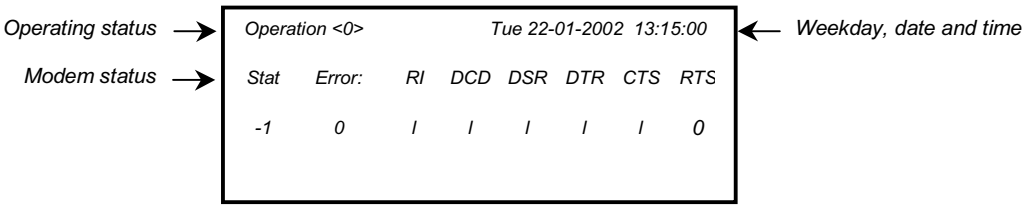


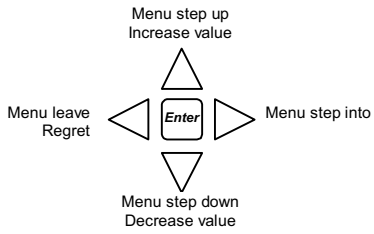


System uptime

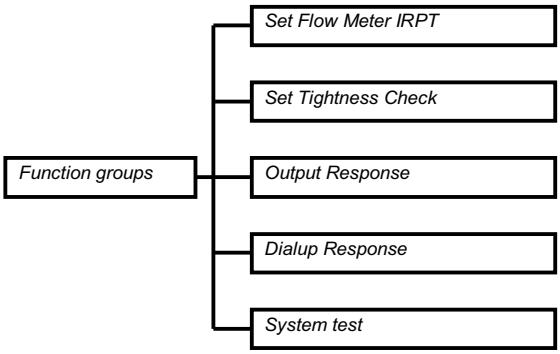


Modem Line Status

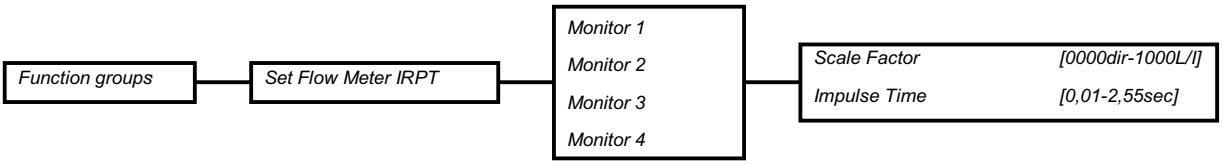

Operating status
Modem status
Operation <0>
Tue 22-01-2002 13:15:00
Stat Error: RI DCD DSR DTR CTS RTS
-1 0 I I I I I 0
Weekday, date and time



Function groups



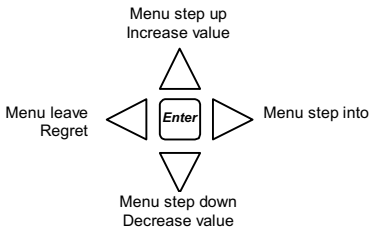
Set Flow Meter IRPT



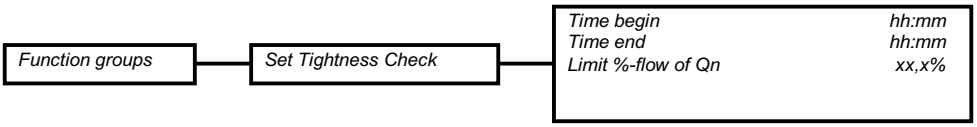
Flow meter impulses may be repeated to other technical equipment such as BM/SCADA systems via the Impulse Repeat output of the WLP-1.
This menu provides control of scaling and impulse duration for optimum connectivity to external equipment.

Scale Factor: *Sets the factor by which flow meter impulses are scaled before appearing at the repeater output.*
Selectable from 0000dir (direct echo of raw meter impulses , no scaling) to 1000 liters per output impulse.

Impulse Time: *Sets the time duration of the repeater output impulse.*
Selectable from 1 to 318 milliseconds (direct) or from 0,01 to 2,55 seconds (scaled).



Set Tightness Check



Tightness Check is a monitoring function which primarily tests installed components (valve and meter), but which also provides valve exercise. Effective testing of system components requires the installation of a drain valve. Failing this, the function provides valve exercise only.

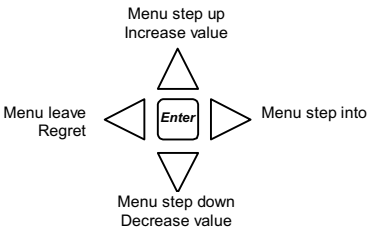
For minimal inconvenience, the tightness check is performed at a time where water consumption and flow are presumably not large. The system will commence the tigthness check when the flow drops below a maximum limit within a time window. If flow remains above the maximum limit, the tightness check is postponed to a later time; however, the system tolerates only so much postponement, and forces execution thereafter.

Note the tightness check is common to all active monitors, and may not be individully executed.
The time window for execution is preset, but may be altered if desired as follows:

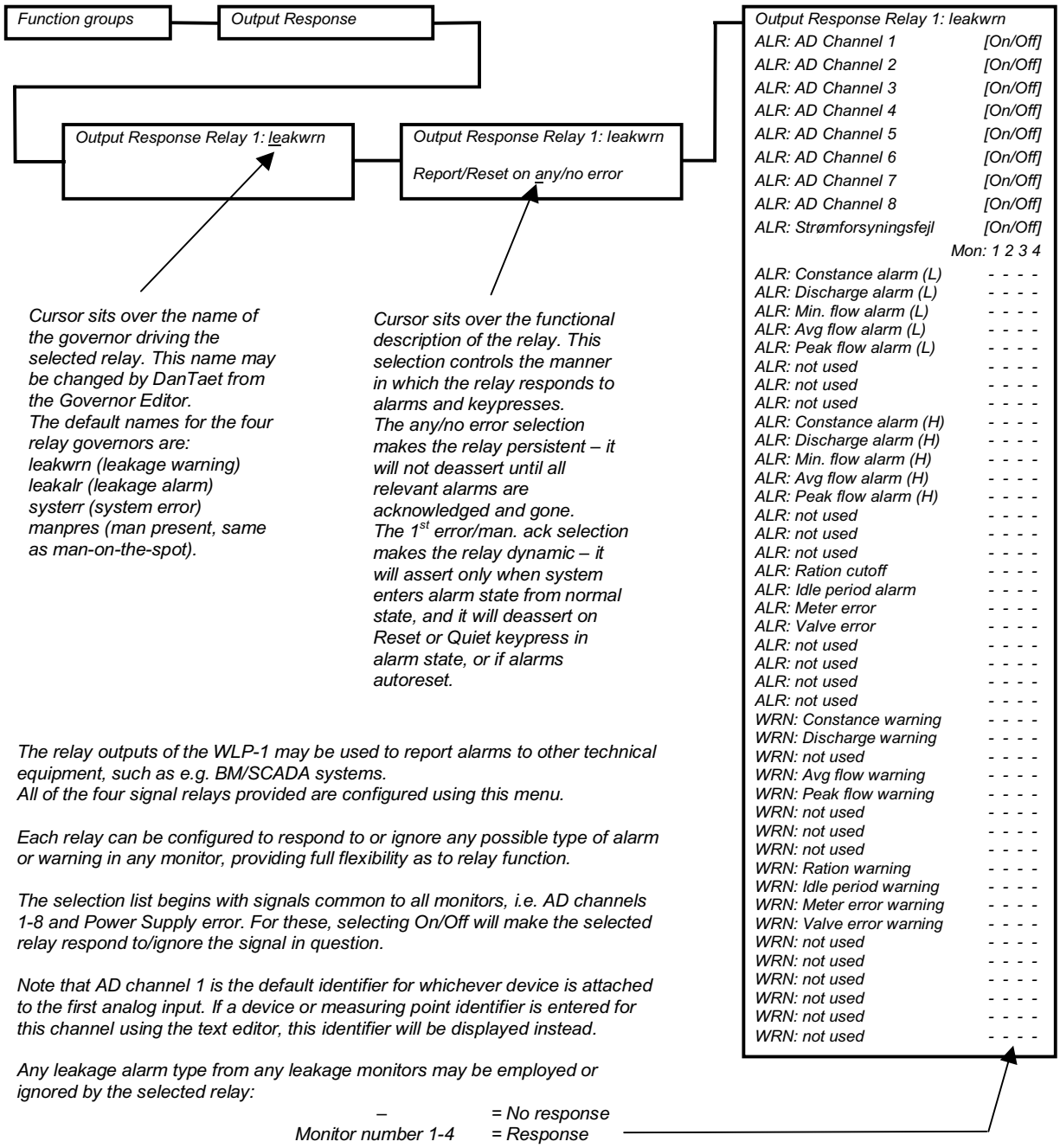
Tb: Time begin *Selectable [hh:mm] = 00:00 to 23:59*
Te: Time end *Selectable [hh:mm] = 00:00 to 23:59*

The flow limit below which tightness check may start is set as follows:

Lf: Limit %-flow of Qn *Selectable 0,0 to 30,0% of Qn*



Output Response


Function groups
Output Response
Output Response Relay 1: leakwrn
Output Response Relay 1: leakwrn
Report/Reset on any/no error
Output Response Relay 1: leakwrn
ALR: AD Channel 1 [On/Off]
ALR: AD Channel 2 [On/Off]
ALR: AD Channel 3 [On/Off]
ALR: AD Channel 4 [On/Off]
ALR: AD Channel 5 [On/Off]
ALR: AD Channel 6 [On/Off]
ALR: AD Channel 7 [On/Off]
ALR: AD Channel 8 [On/Off]
ALR: Strømforsyningsfejl [On/Off]
Mon: 1 2 3 4
ALR: Constance alarm (L) - - - -
ALR: Discharge alarm (L) - - - -
ALR: Min. flow alarm (L) - - - -
ALR: Avg flow alarm (L) - - - -
ALR: Peak flow alarm (L) - - - -
ALR: not used - - - -
ALR: not used - - - -
ALR: not used - - - -
ALR: Constance alarm (H) - - - -
ALR: Discharge alarm (H) - - - -
ALR: Min. flow alarm (H) - - - -
ALR: Avg flow alarm (H) - - - -
ALR: Peak flow alarm (H) - - - -
ALR: not used - - - -
ALR: not used - - - -
ALR: not used - - - -
ALR: Ration cutoff - - - -
ALR: Idle period alarm - - - -
ALR: Meter error - - - -
ALR: Valve error - - - -
ALR: not used - - - -
ALR: not used - - - -
ALR: not used - - - -
ALR: not used - - - -
WRN: Constance warning - - - -
WRN: Discharge warning - - - -
WRN: not used - - - -
WRN: Avg flow warning - - - -
WRN: Peak flow warning - - - -
WRN: not used - - - -
WRN: not used - - - -
WRN: not used - - - -
WRN: Ration warning - - - -
WRN: Idle period warning - - - -
WRN: Meter error warning - - - -
WRN: Valve error warning - - - -
WRN: not used - - - -
WRN: not used - - - -
WRN: not used - - - -
WRN: not used - - - -
WRN: not used - - - -
WRN: not used - - - -

Cursor sits over the name of the governor driving the selected relay. This name may be changed by DanTaet from the Governor Editor.
The default names for the four relay governors are:
leakwrn (leakage warning)
leakalr (leakage alarm)
systerr (system error)
manpres (man present, same as man-on-the-spot).

Cursor sits over the functional description of the relay. This selection controls the manner in which the relay responds to alarms and keypresses.
The any/no error selection makes the relay persistent – it will not deassert until all relevant alarms are acknowledged and gone.
The 1st error/man. ack selection makes the relay dynamic – it will assert only when system enters alarm state from normal state, and it will deassert on Reset or Quiet keypress in alarm state, or if alarms autoreset.

The relay outputs of the WLP-1 may be used to report alarms to other technical equipment, such as e.g. BM/SCADA systems.
All of the four signal relays provided are configured using this menu.

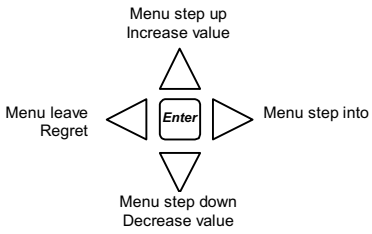
Each relay can be configured to respond to or ignore any possible type of alarm or warning in any monitor, providing full flexibility as to relay function.

The selection list begins with signals common to all monitors, i.e. AD channels 1-8 and Power Supply error. For these, selecting On/Off will make the selected relay respond to/ignore the signal in question.

Note that AD channel 1 is the default identifier for whichever device is attached to the first analog input. If a device or measuring point identifier is entered for this channel using the text editor, this identifier will be displayed instead.

Any leakage alarm type from any leakage monitors may be employed or ignored by the selected relay:

–	*= No response*
Monitor number 1-4	*= Response*



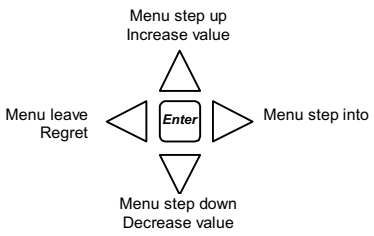
Dialup Response

Dialup Response governs phone callouts from the WLP-1 computer via modem. This menu configures, links, and prioritises phone numbers, messages, time windows and individual error response settings.
Four different dialup responses may be set.

Function groups — *Dialup response* — *Dialup Response [1-4]*

Dialup Resonse: [Selected]	
Message [-/1-4]: [Text]	
Dialup #[-/1-4]: [Ph.no. - identity]	
Alt #[-/1-4]: [Ph.no. - identity]	
Permit start: [hh:mm] on: [-------]	
Permit end: [hh:mm] on: [-------]	
ALR: AD channel 1	*[On/Off]*
ALR: AD channel 2	*[On/Off]*
ALR: AD channel 3	*[On/Off]*
ALR: AD channel 4	*[On/Off]*
ALR: AD channel 5	*[On/Off]*
ALR: AD channel 6	*[On/Off]*
ALR: AD channel 7	*[On/Off]*
ALR: AD channel 8	*[On/Off]*
ALR: Power Supply error	*[On/Off]*
	Mon: 1 2 3 4
ALR: Constance alarm (L)	- - - -
ALR: Discharge alarm (L)	- - - -
ALR: Min. flow alarm (L)	- - - -
ALR: Avg flow alarm (L)	- - - -
ALR: Peak flow alarm (L)	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: Constance alarm (H)	- - - -
ALR: Discharge alarm (H)	- - - -
ALR: Min. flow alarm (H)	- - - -
ALR: Avg flow alarm (H)	- - - -
ALR: Peak flow alarm (H)	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: Ration cutoff	- - - -
ALR: Idle period alarm	- - - -
ALR: Meter error	- - - -
ALR: Valve error	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: not used	- - - -

The first menu selects the desired dialup response, from 1 thru 4, using up/down keys. Once a dialup response is selected, the next menu is entered using arrow key ▷ .
This menu covers all settings for the selected dialup response.



The following items may be set:

Message transmitted by session.
Message [-/1-4]: [Text] *Selectable* *- = No message*
1-4 = Message 1 thru 4
Message is automatically displayed, and may be changed/modified using the text editor.

Primary phone number to dial.
Dialup # [-/1-4]: [Ph.no. - identity] *Selectable* *- = No dialup number*
1-4 = Dialup number 1 thru 4
Dialup number and identity are auto displayed and may be modified in the Dialup Settings menu.

Alternative phone number to dial.
Alt. # [-/1-4]: [Ph.no. - identity] *Selectable* *- = No dialup number*
1-4 = Dialup number 1 thru 4
Dialup number and identity are auto displayed and may be modified in the Dialup Settings menu.
The time interval(s) in which to use the primary phone number is set in the menu item below. Outside of this interval, the alternate number is used.

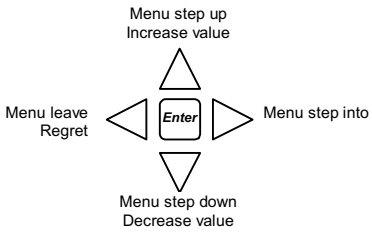
Permit start: [hh:mm] on: [-------] *Selectable [hh:mm] = 00:00 to 23:59*
Field on: [-------] = select/deselect weekdays monday thru sunday using▽ △

Permit end: [hh:mm] on: [-------] *Selectable [hh:mm] = 00:00 to 23:59*
Field on: [-------] = select/deselect weekdays monday thru sunday using▽ △

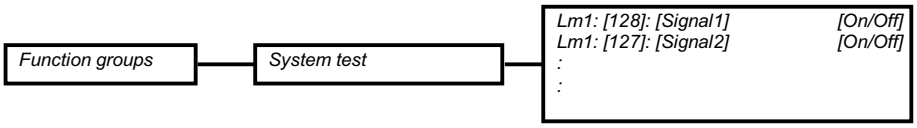
The list of alarm types ALR is used to activate/deactivate callout for each alarm type.
Selectable *On = callout*
Off = no callout

Please note that if the customer enters a textual measuring point identification for an AD channel, this will replace the AD channel designation in many menu windows.

Any leakage alarm type from any leakage monitors may be employed or ignored by the selected dialup response:
- = No response
Monitor number 1-4 = Response



System test

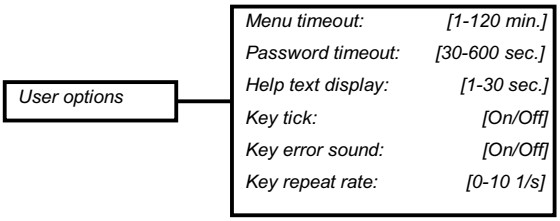


The system test menu permits the testing of response function settings by manually forcing a temporary alarm condition by asserting the specified signal.
For each signal, the alarm condition is set/removed using ▽ △ .

Lm1 = Leakage monitor 1
Lm2 = Leakage monitor 2
Lm3 = Leakage monitor 3
Lm4 = Leakage monitor 4
COM = Non-monitor specific signals

User options

The menu item User options is used to set preferences on a per-user basis with respect to login time, help text display and keyboard behaviour.



Setting Menu timeout

This item is used to set the maximum keyboard inactivity time for the user menu. After timeout the computer will revert to displaying the selected root window.

Timeout selectable from 1 to 120 minutes.

Setting Password timeout

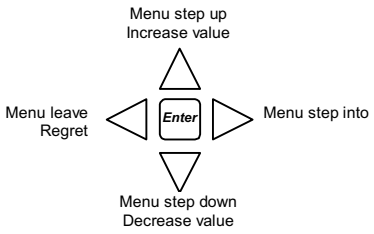
This item is used to set the maximum keyboard inactivity time for the user password. After timeout the computer will log out and assume the least privileged ID = Anybody.

Timeout selectable from 30 to 600 seconds.

Setting help text display time

This item is used to set the duration of temporary help texts appearing in the display.

Display time selectable from 1 to 30 seconds.



Setting key tick

This item is used to select/deselect buzzer sound (brief tick) on key-press.
Selectable: On = tick
Off = no tick

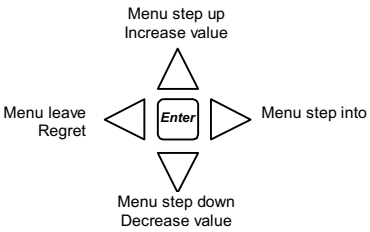
Setting key error sound

This item is used to select/deselect buzzer error sound (beep) on invalid key-press or when access to a menu item is denied.
Selectable: On = beep
Off = no beep

Setting key repeat rate

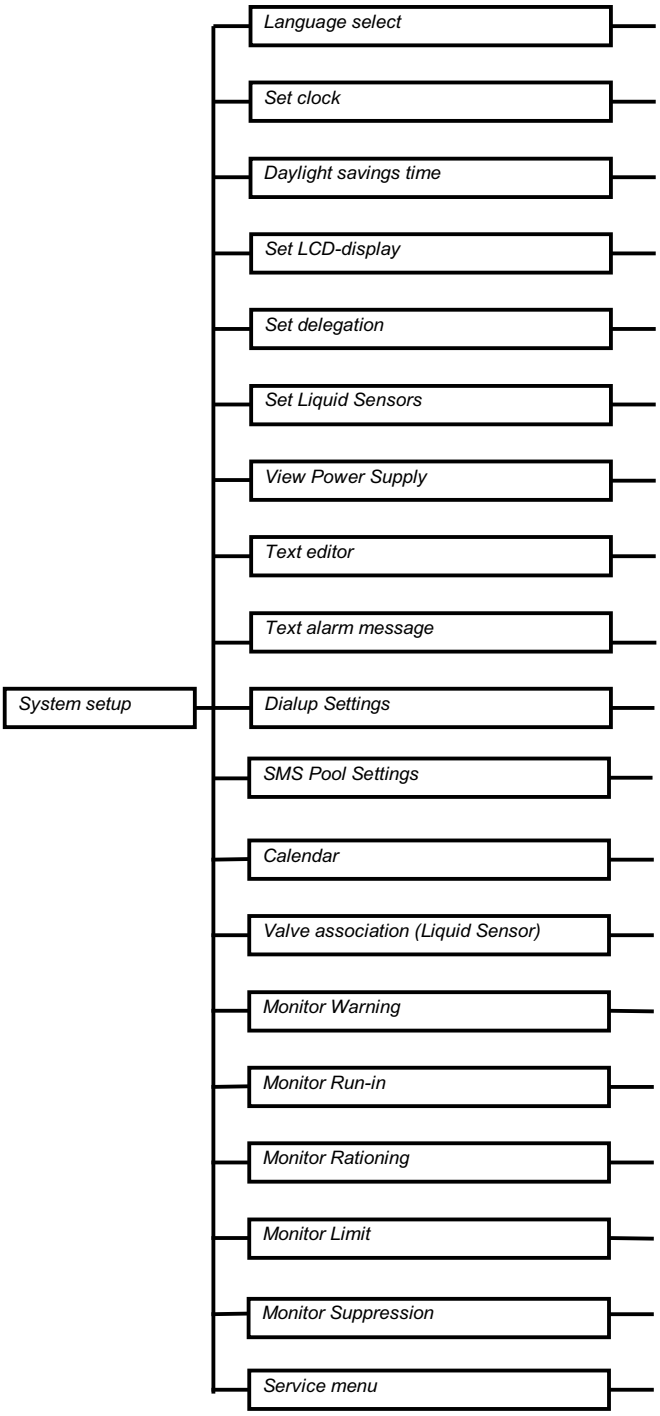
This item is used to set the speed with which a key repeats when kept depressed.

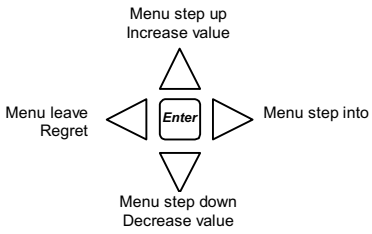
Repeat rate selectable from 0 to 10 repetitions/second.



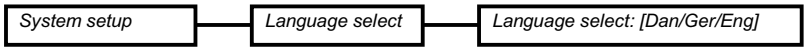
System setup

The menu item System Setup contains a series of submenus as shown in the diagram below.
The individual submenus are described in this section.



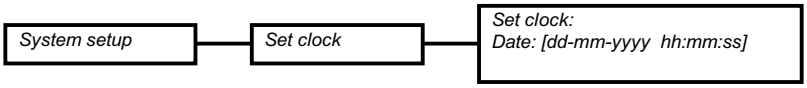


Language select



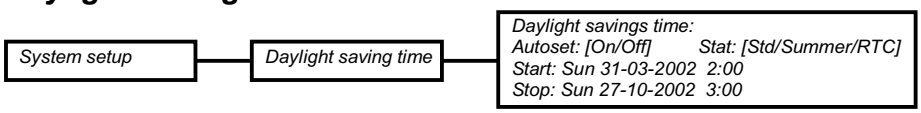
This item is used to select the language used in the menu system. Language is selectable Danish, German, or English. User-entered texts are unaffected.

Set clock



This item is used to set date/time/year of the internal clock.
In a networked system this should only be done on the gateway.

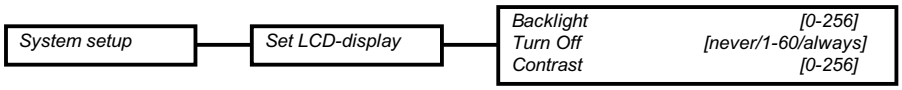
Daylight savings time



This item is used to select whether the WLP-1 computer should automatically change between normal/daylight savings time, or whether normal time should be used all year.

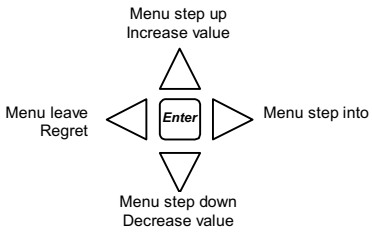
Selectable Autoset On or Off.

Set LCD-display

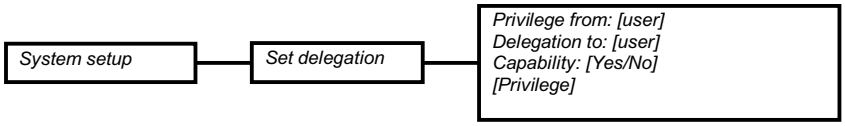


This item is used to set contrast, backlight intensity and duration for the LCD-display.

Selectable:	*Backlight*	*Interval from 0 to 256*
	Turn Off (backlight)	*never*
		Interval from 1 to 60 minutes
		always
	Contrast	*Interval from 0 to 256*



Set delegation.



This menu item is used to delegate or revoke menu system privileges from a higher to a lower ranking user in the hierarchy. Only privileges actually possessed can be delegated or revoked. If more than one user level is traversed in the delegation, intermediate user levels are affected as well.

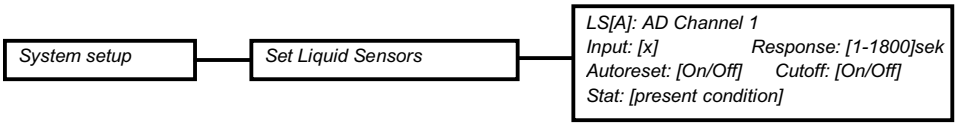
Delegation takes place thus:

Privilege from:	*Identity of the user currently logged in*
Delegation to:	*Select among lower ranking users*
Capability:	*Select Yes to delegate or No to revoke*
[Privilege]	*Select among possible privileges.*

Each delegation, Yes or No, is enforced by pressing ENTER.

When scrolling through possible privileges, the Capability field may display Forbidden! This means the current user does not possess the privilege in question himself, and therefore may not delegate or revoke it.

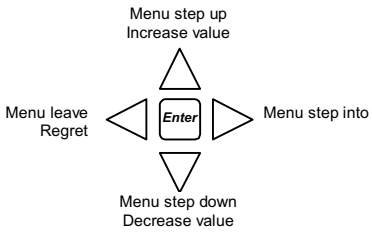
Set Liquid Sensors



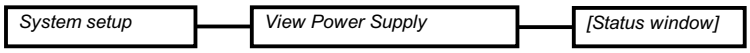
This menu item is used to set the characteristics of the attached liquid sensors.

Selectable:

LS[A]: ID	*Select measuring point using the keys▽ △*
Input:	*Number of physical channel to which sensor is attached.*
Response:	*Delay time of alarm response, selectable 1 to 1800 seconds.*
Autoreset:	*Automatic alarm acknowledge (reset) if liquid vanishes.*
	On = Automatic alarm acknowledge.
	Off = Alarm persistent.
Cutoff:	*Actuate cutoff valves on alarm.*
	On = Close cutoff valves.
	Off = Do not close cutoff valves.
Stat:	*Indicates the present condition of the liquid sensor.*

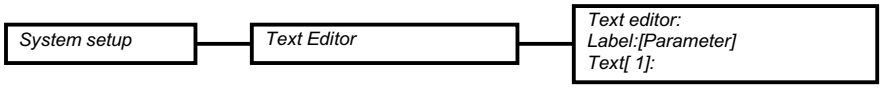


View Power Supply



This item displays the condition of all internal and external power supplies.

Text editor



The text editor is used to assign plaintext identifiers to certain parameters.
The following parameters may be assigned an identifier:

System ID	*(Monitoring point (leakage), e.g.: Building D2 - Humidifier)*
AD channel 1	*(Monitoring point (AD channel 1), e.g.: Stores K2)*
AD channel 2	
AD channel 3	
AD channel 4	
AD channel 5	
AD channel 6	
AD channel 7	
AD channel 8	
Callout message #1	*(Text of callout message no.1, e.g.: Air humidifier leakage)*
Callout message #2	
Callout message #3	
Callout message #4	

To enter text, place the cursor at the relevant character position, and use the▽ △ keys to produce the desired letter or symbol.

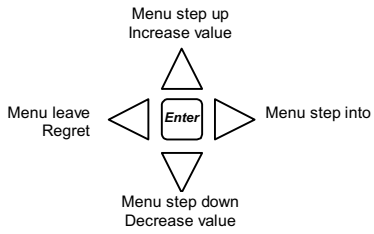
Available characters are:

!?'#$%&³°@<>()[]{}/+-=;:,. Π← → 0123456789abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZæøåÆØÅ*

Three of these symbols represent a function and may not be used as characters in a sentence. This applies to the following symbols:

Π *Implements erase-to-end-of-line by placing cursor on the leftmost of the characters to be deleted, changing this to the symbol ▷ Π, pressing and completing with ENTER.*

E.g.: This is a demonstration
This is a demoΠstration *[▷] [ENTER]*
This is a demo



➔ *Implements insert-blanks-at-cursor by placing cursor at the desired insert point, selecting the function ➔ and pressing ▷ until sufficient whitespace is inserted, then completing with ENTER.*

E.g.: This is a demonstration
This is a ➔demonstration [▷] x N [ENTER]
This is a demonstration

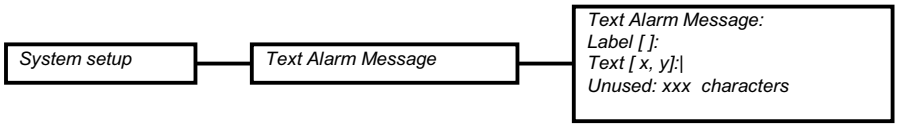
← *Implements erase-left-of-cursor (backspace) by selecting← and pressing ◁ until unwanted characters are deleted, then completing with ENTER. This function will delete whitespace and characters alike.*

E.g.: This is a ← demonstration [◁] x N [ENTER]
This is a demonstration

This is a test and a ←demonstration [◁] x N [ENTER]
This is a demonstration

While either of these functions is active, left/right arrow key input goes to the functions. To regret any change made but not completed, use the keys▽ △ to disable the function, then back the cursor out of the text using◁.

Text Alarm Message

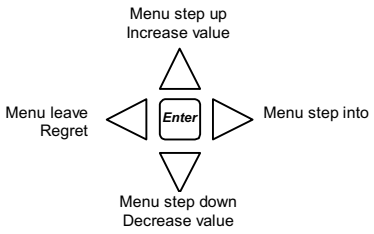


A user help text may be associated with every alarm type, and this text will be displayed in the alarm list window along with the standard alarm message.
User help texts are entered using the text editor as described above.

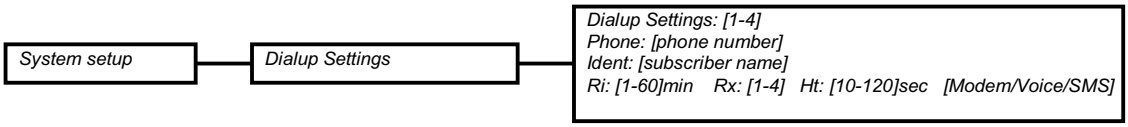
Label [ ]: Select standard alarm message to associate with
Text [x, y]: Enter user help text here using text editor as described above.

Number of characters in the text
Cursor position

Unused: nnn charactersRemaining available character memory space.



Dialup Settings



This item is used to set characteristics and preferences for up to four dialup targets. A plaintext identifier may be associated with each target. The setting of phone number and identifier is performed using the text editor as described above.

Dialup Settings:	*Select among targets 1 thru 4*
Phone:	*Enter phone number to call*
Ident:	*Enter a plaintext identifier for subscriber, e.g.: Janitor*
Ri:	*Interval between dialup attempts. Selectable from 1 to 60 minutes.*
Rx:	*Maximum consecutive attempts when call is unanswered.*
Ht:	*Minimum call duration. Selectable from 10 to 120 seconds.*
Modem/Voice/SMS pool x:	*Select expected answer type for connection.*

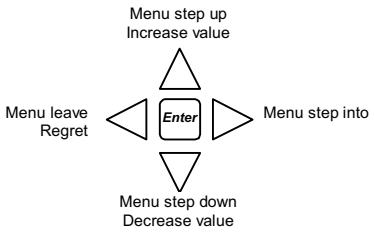
If the call is routed via a switchboard (PBX) requiring a prefix to obtain an outside line, the WLP can be directed to wait (W) for a new dial tone after the prefix thus:

0W63174500

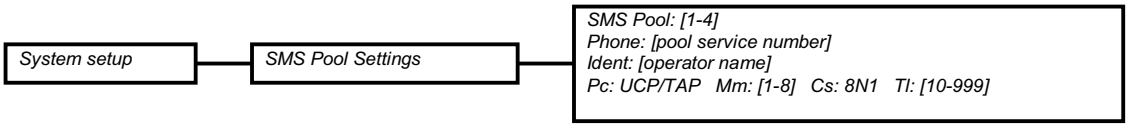
If the message is to be delivered as SMS to a cell phone, only the bare recipient number must be listed thus:

63174500

If the attached modem is analog, select the desired SMS gateway/operator pool by ”SMS pool 1-4”, and configure the connections in the following menu item ”SMS Pool Settings”. If the attached modem is digital, select ”SMS v/GSM” instead.

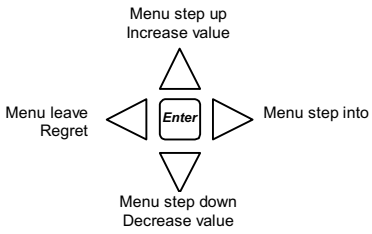


SMS Pool Settings

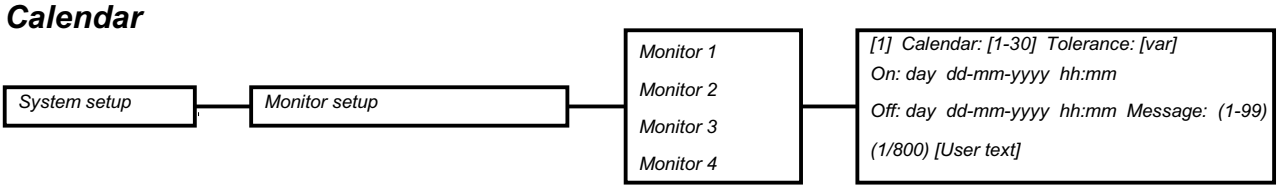


This item is used to set characteristics and preferences for up to four SMS pool targets. A plaintext identifier may be associated with each target. The setting of phone number and identifier is performed using the text editor as described above.

SMS Pool:	*Select among targets 1 thru4*
Phone:	*Enter phone number of service pool*
Ident:	*Enter a plaintext identifier for operator, e.g.: TeleDanmark*
Pc:	*Protocol Type:* ***UCP**: **U**niversal **C**omputer **P**rotocol.* ***TAP**: **T**elocator **A**lphanumeric **P**rotocol.* *For the time being, only UCP is implemented. Selecting TAP has no effect.*
Mm:	*Maximum number of SMS messages to transmit in bulk. This is intended for future protocols. The UCP protocol gathers everything into one SMS message.*
Cs:	*Communications protocol (Data bits, parity, stop bits) used by the service pool. Note: the UCP protocol employs 8N1.*
Tl:	*Maximum number of characters per message. This is an operator-dependent value. Note that the system truncates messages of excessive length by itself.*



Calendar



The Calendar function permits user influence on the monitoring sensitivity in selectable time intervals. The user may set the system to tolerate a larger consumption at certain events, e.g. general assembly, reception etc., or conversely tolerate only a lower consumption during vacations and holidays. Any calendar event may be identified in plaintext. Once created, an event identifier is stored for later use, if desired.

The Calendar function is set as follows:

[1] = Indicates the active monitor [monitor 1 in this case]

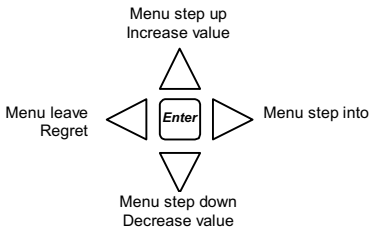
Calendar = Select among up to 30 calendar events.
Note an event is active only when both tolerance and time are set; otherwise the entry is available for use.

Tolerance = Select the temporary system tolerance/sensitivity from the list:
Delete = Erase event
Low = Force low consumption tolerance
High = Force high consumption tolerance
2xHigh = Force 2x high consumption tolerance
3xHigh = Force 3x high consumption tolerance

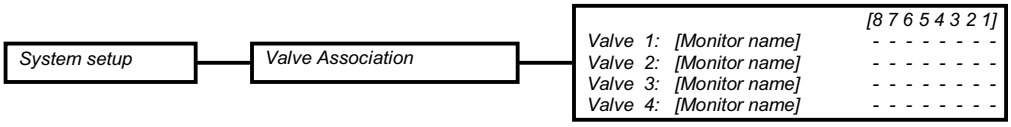
On = Display/modify event start time

Off = Display/modify eventend time

Message = Selectable from up to 99 previously created texts visible in the lower field. If the field is empty, a new text may be written into the lower field which acts like the previously described Text Editor. Note that if the lower field reads "shared" after the arrow→, this particular text is in use by another calendar event. If the selected text is altered, the display of these other events is also affected.

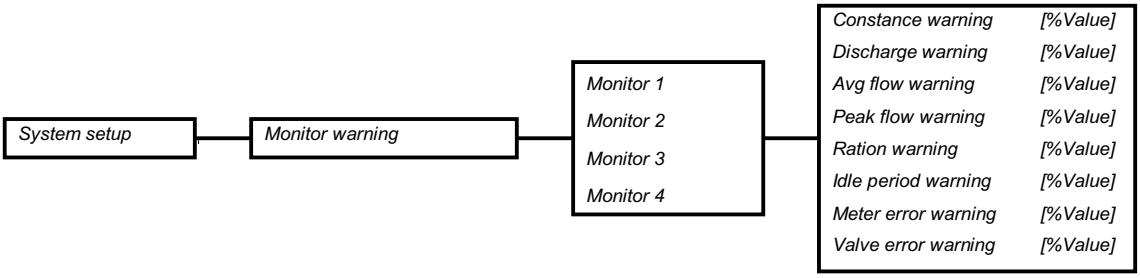


Valve Association (Liquid Sensor)

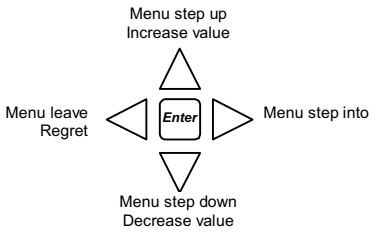

System setup
Valve Association
[8 7 6 5 4 3 2 1]
Valve 1: [Monitor name] - - - - - - - -
Valve 2: [Monitor name] - - - - - - - -
Valve 3: [Monitor name] - - - - - - - -
Valve 4: [Monitor name] - - - - - - - -

This menu is used to make associations between atached liquid sensors and active monitors, i.e. permit a liquid sensor error to operate the monitor's cutoff valve. If a monitor name is blank, the monitor is not active.
To associate a liquid sensor with a monitor, permitting it to operate the monitor's cutoff valve, use the ▽ △ keys to change "–" to the liquid sensor physical channel number. Note it is possible to associate a liquid sensor with more than one monitor.

Monitor warning



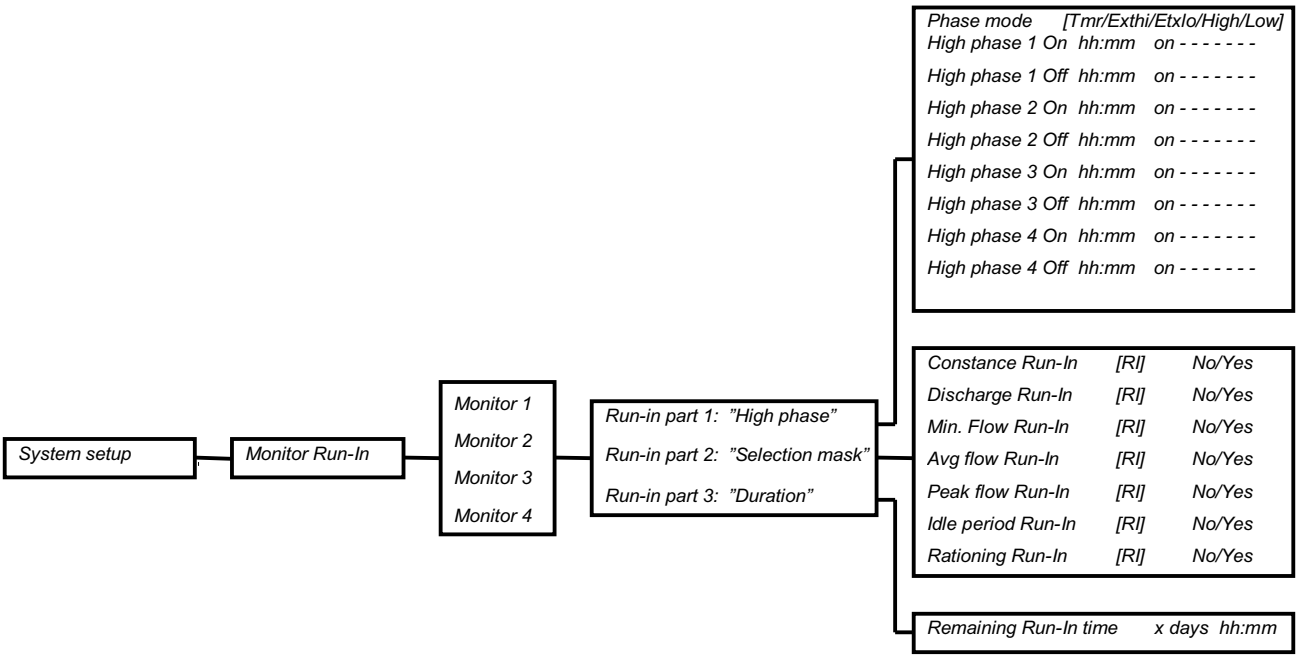
This menu is used to set the relative warning limits in percent of the alarm limits.



Monitor Run-In

To aid the setting of alarm limits for active monitors, the WLP-1 may perform a run-in of all or or some of the monitoring functions. On completion of run-in, WLP-1 will calculate and set appropriate monitoring parameters and resume monitoring the installation using the new parameters.
Note that monitoring functions can not issue alarms during run-in, i.e. they are essentially passivated for the duration of run-in.

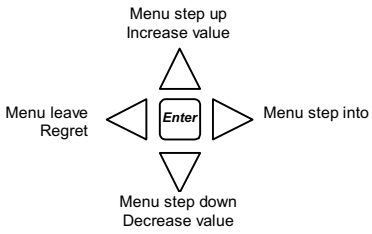
Run-in is set up in three stages as shown below.


System setup
Monitor Run-In
Monitor 1
Monitor 2
Monitor 3
Monitor 4
Run-in part 1: "High phase"
Run-in part 2: "Selection mask"
Run-in part 3: "Duration"
Phase mode [Tmr/Exthi/Etxlo/High/Low]
High phase 1 On hh:mm on - - - - - - -
High phase 1 Off hh:mm on - - - - - - -
High phase 2 On hh:mm on - - - - - - -
High phase 2 Off hh:mm on - - - - - - -
High phase 3 On hh:mm on - - - - - - -
High phase 3 Off hh:mm on - - - - - - -
High phase 4 On hh:mm on - - - - - - -
High phase 4 Off hh:mm on - - - - - - -
Constance Run-In [RI] No/Yes
Discharge Run-In [RI] No/Yes
Min. Flow Run-In [RI] No/Yes
Avg flow Run-In [RI] No/Yes
Peak flow Run-In [RI] No/Yes
Idle period Run-In [RI] No/Yes
Rationing Run-In [RI] No/Yes
Remaining Run-In time x days hh:mm

Run-In is started as follows:
First select the active monitor to run-in (only if several monitors are active). Then three menus must be completed prior to run-in commencement.

Run-In part 1: "High phase"
Switching between High and Low phases is done either by external signal, or by the internal timer. If the system is going to employ the internal timer for phase switching, its switching points must be set prior to run-in, and a certain preconception of the timewise distribution of the daily consumption is required. High and Low phase may be characterised as follows:

- *High phase is employed when a high consumption is allowed (during working hours when employees are present, or when certain equipment is running)*
- *Low phase is employed when only a low consumption is allowed (e.g. nights and weekends where minimal consumption is expected)*



First select the High/Low phase switching mechanism as follows:

Phase mode *Tmr/Exthi/Extlo/High/Low*

Tmr = Phase governed by timer according to the High phase On/Off settings in force.

Exthi = External high select. Activating the digital Phase input forces monitoring with High Phase sensitivity. Note that in the absence of an external signal, the monitor will use Low Phase sensitivity permanently.

Extlo = External low select. Activating the digital Phase input forces monitoring with Low Phase sensitivity. Note that in the absence of an external signal, the monitor will use High Phase sensitivity permanently.

High = Fixed High Phase. The monitor will always use High Phase sensitivity.

Low = Fixed Low Phase. The monitor will always use Low Phase sensitivity.

If Timer is selected for control of Phase, times and weekdays below must be set, at least for one complete On/Off cycle. Note that a timer may cause up to four phase switchings per weekday.
Setting is done as follows:

High Phase start time

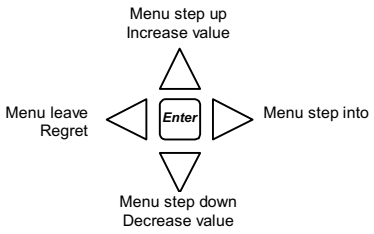
High phase 1 On: *hh:mm* *on - - - - - - -*

hh:mm = start time (hours:minutes)
on - - - - - - - = weekdays, beginning with monday. Weekdays are activated by ▽ △

High Phase end time

High Phase 1 Off: *hh:mm* *on - - - - - - -*

hh:mm = end time (hours:minutes)
on - - - - - - - = weekdays, beginning with monday. Weekdays are activated by ▽ △



Run-In part 2: "Selection mask"

This menu item selects which monitoring functions to run-in. Note that run-in is already in progress for a function, if it has [RI] written next to it. Only one run-in session is possible at a time, and it must be allowed to complete (or deliberately aborted) prior to starting another.

Selection of functions to run-in is done as follows:

Constance Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Discharge Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Min. flow Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Avg flow Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Peak flow Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Idle period Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Rationing Run-In	*No = Run-In deselected* *Yes= Run-In selected* *Note the Rationing function is deactivated by default. If this functionality is desired, the function must be activated prior to starting run-in. This is done in the menu* ***System setup – Monitor Rationing,*** *in which the daily ration must be set to a nonzero value, e.g. 1,000 m3.*

Run-In part 3: "Time"
Finally, the run-in duration is set as follows:

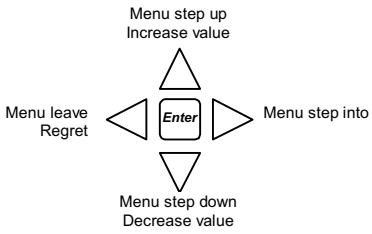
Remaining run-in time xxx days hh:mm

xxx days = Selectable 1 to 365 days

hh:mm = hours:minutes

Note that the longer the run-in duration, the more accurate the resulting alarm limits, which are derived from the resulting run-in measured values by adding a percentage of: 5+(300/run-in duration in days)%
However, for idle period, the percentage is subtracted, and the result further divided by two.

Recommended minimum run-in duration is 30 days.

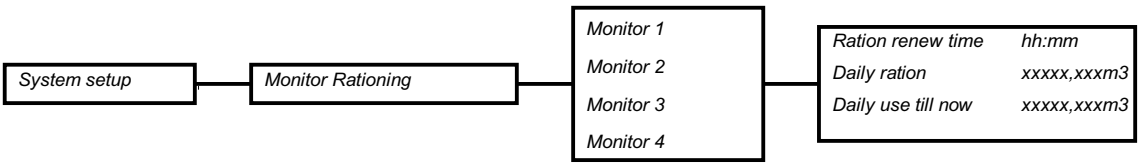


Run-in commences once the remaining time is set. Run-In indications are remaining time is counting down towards zero; the Spec. Mon. indicator will flash yellow, and the Status display window indicates [RI].

Run-in addendum:
Doing a monitor run-in without installing new alarm limits may be accomplished as follows:

The alarm limits for the monitors to run-in are set to 0.000, effectively disabling these functions. Next, run-in is started for the relevant monitoring functions. Once complete, the maximum values encountered during run-in may be inspected from the menu ***Factory Settings - Monitor Setup - RI/L and RI/H****.*
Alarm limits must now either be manually restored to their actual value prior to run-in, or new alarm limits based on the run-in results may be entered manually. Be sure to add a margin yourself! Note that with this approach, the selected monitoring functions are disabled during run-in, and after until alarm limits are manually set to nonzero values!

Monitor Rationing

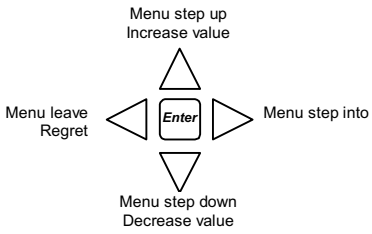


A daily ration (amount of water) may be set and enforced with the WLP-1. If the ration is used up, an alarm is issued, the installation is cut off, and will remain cut off until a new ration is allotted. A rationing alarm may only be cleared by DanTaet a/s.

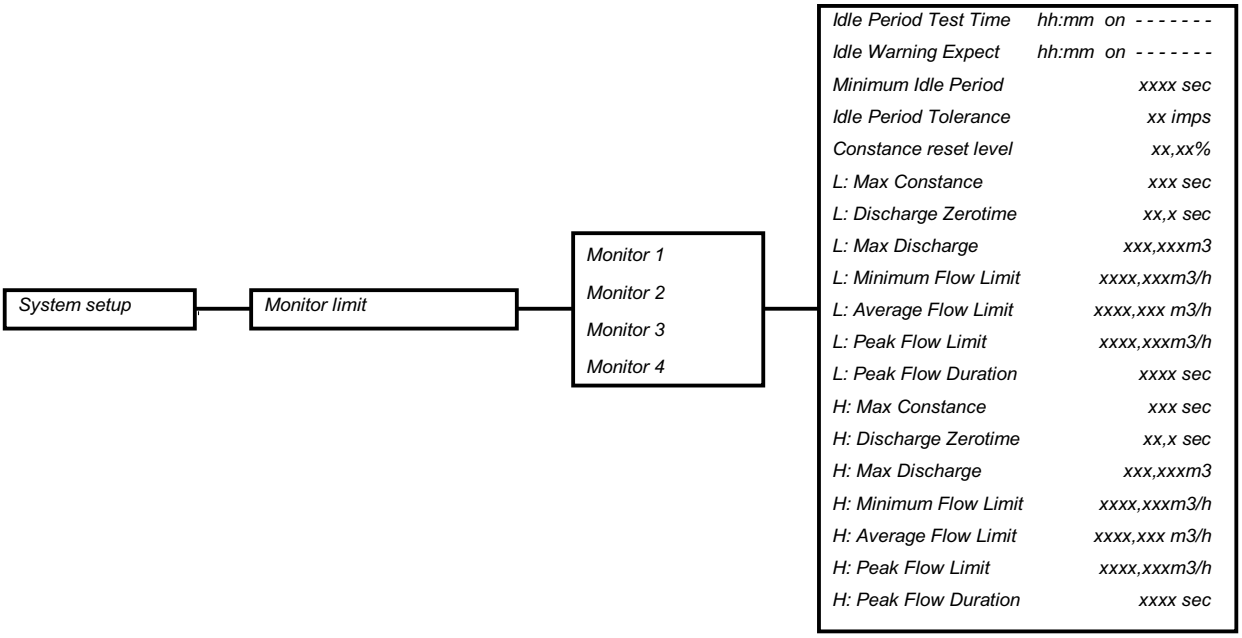
Note that rationing is off by default. If this functionality is desired, it must be activated by setting the daily ration to a nonzero value corresponding to the maximum permissible daily consumption. Alternatively, the ration may be set to 1,000 m^3 immediately followed by a run-in of the rationing function.

Rationing is set as follows:

Ration renew time	*hh:mm*	*Time of ration allotment (hours;minutes)*
Daily ration	*xxxxx,xxx m3*	*Size of the ration. May be set manually, or by run-in.* *A setting of 0,000 m^3 disables the rationing function.*
Daily use till now	*xxxxx,xxx m3*	*Amount of water consumed since allotment.*



Monitor Limit


System setup
Monitor limit
Monitor 1
Monitor 2
Monitor 3
Monitor 4
Idle Period Test Time hh:mm on - - - - - - -
Idle Warning Expect hh:mm on - - - - - - -
Minimum Idle Period xxxx sec
Idle Period Tolerance xx imps
Constance reset level xx,xx%
L: Max Constance xxx sec
L: Discharge Zerotime xx,x sec
L: Max Discharge xxx,xxxm3
L: Minimum Flow Limit xxxx,xxxm3/h
L: Average Flow Limit xxxx,xxx m3/h
L: Peak Flow Limit xxxx,xxxm3/h
L: Peak Flow Duration xxxx sec
H: Max Constance xxx sec
H: Discharge Zerotime xx,x sec
H: Max Discharge xxx,xxxm3
H: Minimum Flow Limit xxxx,xxxm3/h
H: Average Flow Limit xxxx,xxx m3/h
H: Peak Flow Limit xxxx,xxxm3/h
H: Peak Flow Duration xxxx sec

The limit settings of the monitoring functions may be individually adapted if desired, e.g. in the event of consistent false alarms.
Note that changes to the alarm limits can severely impair the monitoring, and must be made with good judgment and in small steps.

Idle Period Test Time

Adjustable	*Factory setting*
hh:mm on: mtwtfss	*0:00 on: mtwtfss*

A lull in the consumption of duration Minimum Idle Period is sought over a 24-hour period to detect any seepage. If this lull does not occur, an Idle Period alarm is issued.

This menu sets the time for reporting the Idle Period alarm.

Note! If Idle Period alarms are undesirable on saturdays and sundays, these days must be deselected (set to ”-”) in the selection mask.

Idle Warning Expect

Adjustable	*Factory setting*
hh:mm on: mtwtfss	*90%*

Expected time of Idle Warning if Idle Period not found.

Minimum Idle Period

Adjustable	*Factory setting*
0 - 7200 seconds	*90 seconds*

Idle Period duration in seconds.

Setting this parameter to "0" deactivates the idle period monitor.

Idle Period Tolerance

Adjustable	*factory setting*
1-8 imps	*2 imps*

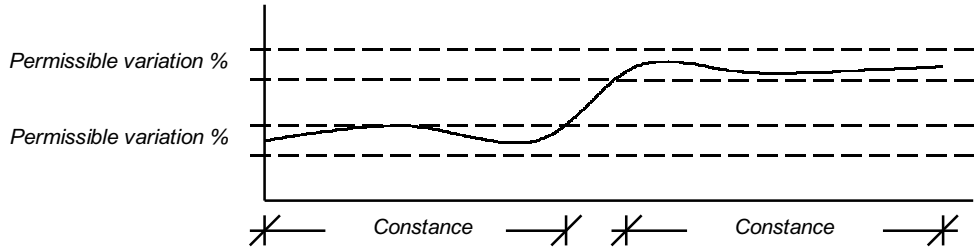
Sets the number of meter impulses that will be tolerated in the Idle Period.

The factory setting of two impulses guards against fluctuations in the water suply. This value is not affected by run-in. If the value of this parameter is unsuitable for the circumstances, it must be changed to an approriate setting prior to run-in.

Constance reset level

Adjustable	*Factory setting*
0-33%	*5%*

This function monitors for constant consumtion (flow). The variation within which the flow is considered constant is set as a percentage.
This value is not affected by run-in. If the value of this parameter is unsuitable for the circumstances, it must be changed to an appropriate setting prior to run-in.

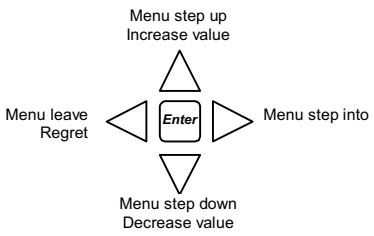


L: Max Constance

Adjustable	*Factory setting*
0-86400 seconds	*300 seconds*

Maximum permissible duration of constant flow in Low Phase.

A setting of "0" for this parameter deactivates the Constance function in Low phase.



L: Discharge Zerotime

Adjustable	*Factory setting*
0-240 seconds	*10 seconds*

Consumption pause required to clear the Max Discharge counter in Low phase. This value is not affected by run-in. If the value of this parameter is unsuitable for the circumstances, it must be changed to an appropriate setting prior to run-in.

A setting of "0" for this parameter deactivates the Max Discharge function in Low phase.

L: Max Discharge

Adjustable	*Factory setting*
0-200% Qn m3	*10% Qn m3*

The limiting value for maximum permissible continuous discharge in Low phase. The discharge counter is cleared at low flows, see Discharge Zerotime above.

A setting of "0" for this parameter deactivates the Max Discharge function in Low phase.

L: Minimum Flow Limit

Adjustable	*Factory setting*
0-100% Qn m3/h	*50% Qn m3/h*

Flow limit which must be undercut by actual flow prior to next High phase.

A setting of "0" for this parameter deactivates the Minimum Flow monitor in Low phase.

L: Average Flow Limit

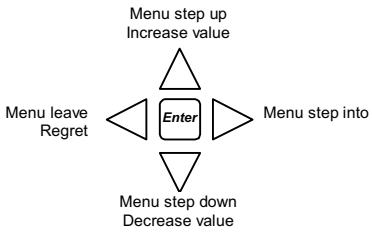
Adjustable	*Factory setting*
0-200% Qn m3/h	*80% Qn m3/h*

Largest permissible 1-minute flow (m^3/h) in Low phase.

A setting of "0" for this parameter deactivates the Average Flow monitor in Low phase.

Example: Flow of 2,8 m^3/h for 1 min. = 46,67 liters of water discharged in1 min. !

$$\frac{2800litre}{60minutes} = 46{,}67litre/minute$$



L: Peak Flow Limit

Adjustable	*Factory setting*
0-200% Qn m3/h	*120% Qn m3/h*

Largest permissible flow (m^3/h) in Low phase. If actual flow exceeds this value for a time exceeding the Peak Flow Duration setting, an alarm is issued.

A setting of "0" for this parameter deactivates the Peak Flow monitor in Low phase.

Example: Flow of 4,2 m^3/h for 10 sec. = 11,67 liters of water discharged in 10 sec. !

$$\frac{4200litre}{3600seconds} \times 10seconds = 11{,}67litre / 10seconds$$

L: Peak Flow Duration

Adjustable	*Factory setting*
0-3600 seconds	*10 seconds*

Maximum permissible duration of actual flow exceeding peak flow limit in Low phase. This value is not affected by run-in. If the value of this parameter is unsuitable for the circumstances, it must be changed to an appropriate setting prior to run-in.

H: Max Constance

Adjustable	*Factory setting*
0-86400 seconds	*300 seconds*

Maximum permissible duration of constant flow in High Phase.

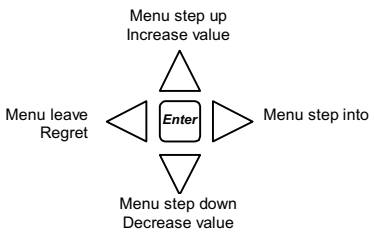
A setting of "0" for this parameter deactivates the Constance function in High phase.

H: Discharge Zerotime

Adjustable	*Factory setting*
0-240 seconds	*10 seconds*

Consumption pause required to clear the Max Discharge counter in High phase. This value is not affected by run-in. If the value of this parameter is unsuitable for the circumstances, it must be changed to an appropriate setting prior to run-in.

A setting of "0" for this parameter deactivates the Max Discharge function in High phase.



H: Max Discharge

Adjustable	*Factory setting*
0-200% Qn m3	*10% Qn m3*

The limiting value for maximum permissible continuous discharge in High phase. The discharge counter is cleared at low flows, see Discharge Zerotime above.

A setting of "0" for this parameter deactivates the Max Discharge function in High phase.

H: Minimum Flow Limit

Adjustable	*Factory setting*
0-100% Qn m3/h	*50% Qn m3/h*

Flow limit which must be undercut by actual flow prior to next Low phase.

A setting of "0" for this parameter deactivates the Minimum Flow monitor in High phase.

H: Average Flow Limit

Adjustable	*Factory setting*
0-200% Qn m3/h	*80% Qn m3/h*

Largest permissible 1-minute flow (m^3/h) in High phase.

A setting of "0" for this parameter deactivates the Average Flow monitor in High phase.

Example: Flow of 2,8 m^3/h for 1 min. = 46,67 liters of water discharged in1 min. !

$$\frac{2800litre}{60minutes} = 46{,}67litre/minute$$

H: Peak Flow Limit

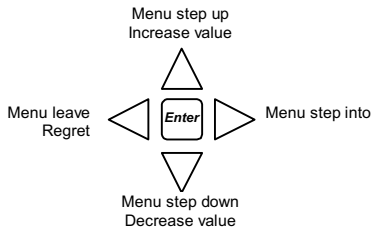
Adjustable	*Factory setting*
0-200% Qn m3/h	*120% Qn m3/h*

Largest permissible flow (m^3/h) in High phase. If actual flow exceeds this value for a time exceeding the Peak Flow Duration setting, an alarm is issued.

A setting of "0" for this parameter deactivates the Peak Flow monitor in High phase.

Example: Flow of 4,2 m^3/h for 10 sec. = 11,67 liters of water discharged in 10 sec. !

$$\frac{4200litre}{3600seconds} \times 10seconds = 11{,}67litre/10seconds$$

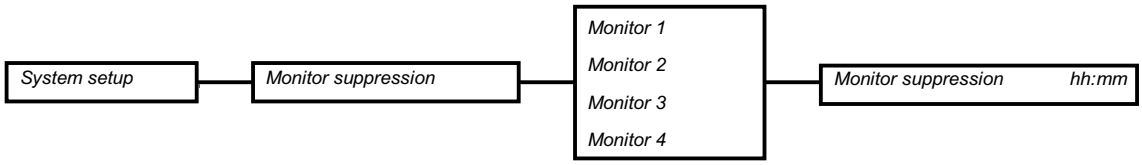


H: Peak Flow Duration

Adjustable	*Factory setting*
0-3600 seconds	*10 seconds*

Maximum permissible duration of actual flow exceeding peak flow limit in High phase. This value is not affected by run-in. If the value of this parameter is unsuitable for the circumstances, it must be changed to an appropriate setting prior to run-in.

Monitor Suppression

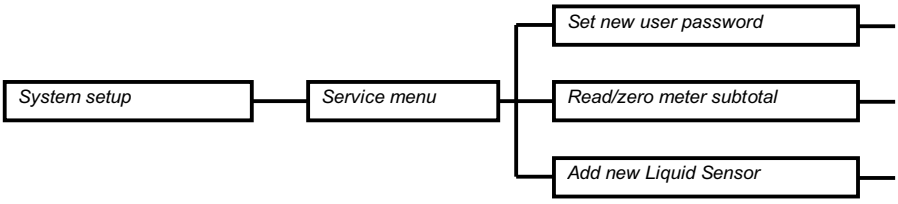


The monitor may be temporarily suppressed if large amounts of water are extraordinarily required. Suppression id done as follows:

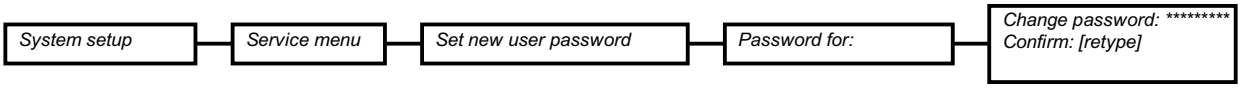
Monitor suppression hh:mm Duration 0 to 48 hours (hours:minutes)

When monitor suppression is active, the Spec. Mon. indicator will flash red, and the Status display will indicate Supress [User]. Suppression will cease when the timer has counted down to zero, or is manually set to zero.

Service menu

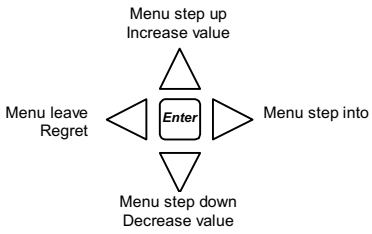


Set new User password

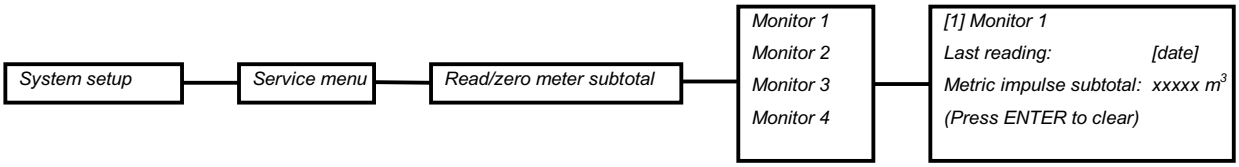


DanTaet, DanTaet representative (superuser) and administrator may all change the password of any lower-ranking user.

First select the User. Then enter the new password followed by ENTER.
Then confirm the new password by retyping; complete with ENTER.

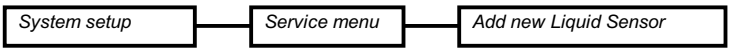


Read/zero meter subtotal



This menu displays the volume registered by the monitor's flow meter since last reading. The counter is zeroed by pressing ENTER. Date and time of zeroing can also be seen in Monitor setup.

Add new Liquid Sensor



The Add new Liquid Sensor menu is a wizard ermitting the attachment of one or more Liquid Sensors to the WLP-1 computer.

The following procedure attaches and activates the Liquid Sensor:

Enter the menu using arrow key ▷

```
Add new Liquid Sensor:
Use AD channel: [Preselected ch. #]
```

Attach the Liquid Sensor to the I/O board channel indicated in the display.
Proceed to next step by pressing ENTER

```
AD channel : [Preselected ch. #]*
Type: Liquid          Stat:
```

At this point, the process may be aborted by pressing ◁
Otherwise, proceed to next step by pressing ENTER.

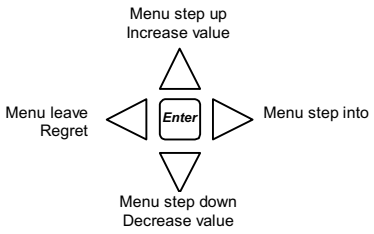
```
LS[A-H]: [Liquid Sensor Name]
Input: [x]          Response: [1-1800]sec
Autoreset: [On/Off]
Stat: [Curent condition]
```

The function of the attached Liquid Sensor is set in this menu.

Selectable items:

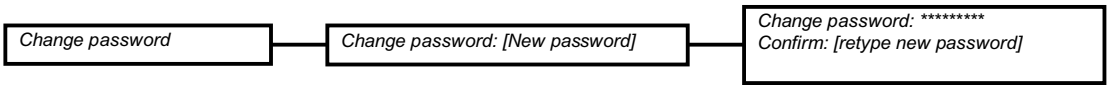
LS[A-H]:	*Logical channel of new liquid sensor. Proceed by pressing ▷*
Input:	*Physical channel of attached Liquid Sensor.*
Response:	*Alarm delay time, selectable from one to 1800 seconds.*
Autoreset:	*Automatic alarm acknowledge (reset) if liquid vanishes.*
	On = acknowledge alarm automatically.
	Off = persistent alarm, requires manual acknowledgement.
Stat:	*Indicates the current condition of the liquid sensor.*

The wizard is now done, and the liquid sensor has been attached and configured.



Change password

A password may be changed at any time. It must consist of from four to eight digits.



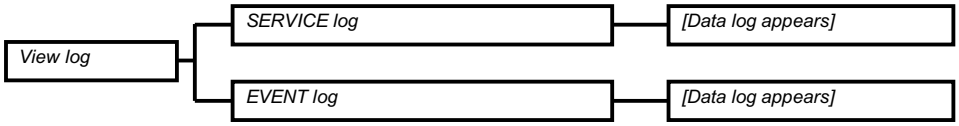
First key in the new password, then press ENTER.
The confirm the new password by retyping; complete by pressing ENTER.

Please note !

It is imperative you remember the new password.
If Operator forgets his password, Superuser may assign a new one for him, as described in the Superuser section.
However, if Superuser forgets his password, only DanTaet a/s can assign a new password for him, either by remote control if the WLP-1 is equipped with a modem, or manually by a site visit.

View log

The WLP-1 computer continuously logs the comings and goings of Users, which changes to the system they make, alarm and event occurrences, and alarm acknowledgements.

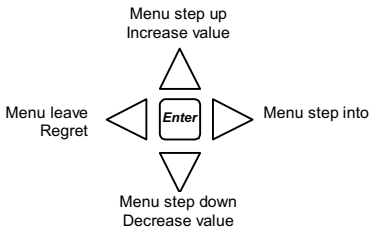


Service log.

This log records all changes to system parameters, with timestamp and userID, and, where possible, from/to values. The log is browsed using the up/down arrow keys.

Event log.

This log records all events occuring during operation, including alarms.
The log is browsed using the up/down arrow keys.

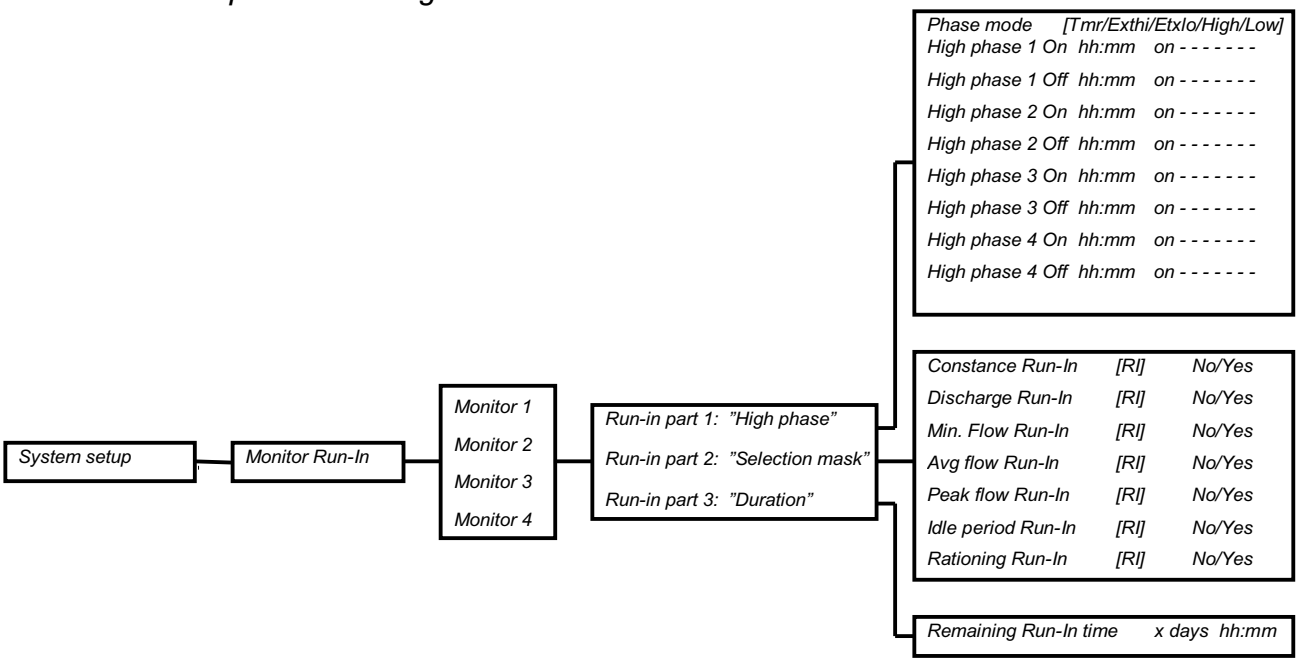


Tips for system configuration

Run-in

To aid the setting of alarm limits for active monitors, the WLP-1 may perform a run-in of all or or some of the monitoring functions. On completion of run-in, WLP-1 will calculate and set appropriate monitoring parameters and resume monitoring the installation using the new parameters.
Note that monitoring functions can not issue alarms during run-in, i.e. they are essentially passivated for the duration of run-in.

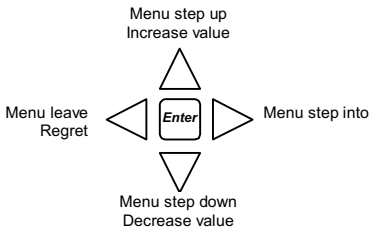
Run-in is set up in three stages as shown below.


System setup
Monitor Run-In
Monitor 1
Monitor 2
Monitor 3
Monitor 4
Run-in part 1: "High phase"
Run-in part 2: "Selection mask"
Run-in part 3: "Duration"
Phase mode [Tmr/Exthi/EtxIo/High/Low]
High phase 1 On hh:mm on - - - - - - -
High phase 1 Off hh:mm on - - - - - - -
High phase 2 On hh:mm on - - - - - - -
High phase 2 Off hh:mm on - - - - - - -
High phase 3 On hh:mm on - - - - - - -
High phase 3 Off hh:mm on - - - - - - -
High phase 4 On hh:mm on - - - - - - -
High phase 4 Off hh:mm on - - - - - - -
Constance Run-In [RI] No/Yes
Discharge Run-In [RI] No/Yes
Min. Flow Run-In [RI] No/Yes
Avg flow Run-In [RI] No/Yes
Peak flow Run-In [RI] No/Yes
Idle period Run-In [RI] No/Yes
Rationing Run-In [RI] No/Yes
Remaining Run-In time x days hh:mm

Run-In is started as follows:
First select the active monitor to run-in (only if several monitors are active). Then three menus must be completed prior to run-in commencement.

Run-In part 1: "High phase"
Switching between High and Low phases is done either by external signal, or by the internal timer. If the system is going to employ the internal timer for phase switching, its switching points must be set prior to run-in, and a certain preconception of the timewise distribution of the daily consumption is required. High and Low phase may be characterised as follows:

- *High phase is employed when a high consumption is allowed (during working hours when employees are present, or when certain equipment is running)*
- *Low phase is employed when only a low consumption is allowed (e.g. nights and weekends where minimal consumption is expected)*



First select the High/Low phase switching mechanism as follows:

Phase mode *Tmr/Exthi/Extlo/High/Low*

Tmr = Phase governed by timer according to the High phase On/Off settings in force.

Exthi = External high select. Activating the digital Phase input forces monitoring with High Phase sensitivity. Note that in the absence of an external signal, the monitor will use Low Phase sensitivity permanently.

Extlo = External low select. Activating the digital Phase input forces monitoring with Low Phase sensitivity. Note that in the absence of an external signal, the monitor will use High Phase sensitivity permanently.

High = Fixed High Phase. The monitor will always use High Phase sensitivity.

Low = Fixed Low Phase. The monitor will always use Low Phase sensitivity.

If Timer is selected for control of Phase, times and weekdays below must be set, at least for one complete On/Off cycle. Note that a timer may cause up to four phase switchings per weekday.
Setting is done as follows:

High Phase start time

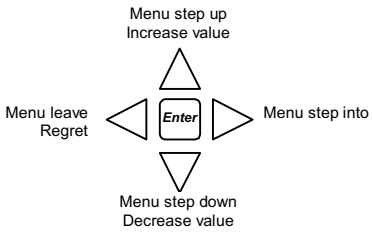
High phase 1 On: *hh:mm* *on - - - - - - -*

hh:mm = start time (hours:minutes)
on - - - - - - - = weekdays, beginning with monday. Weekdays are activated by ▽ △

High Phase end time

High Phase 1 Off: *hh:mm* *on - - - - - - -*

hh:mm = end time (hours:minutes)
on - - - - - - - = weekdays, beginning with monday. Weekdays are activated by ▽ △



Run-In part 2: "Selection mask"

This menu item selects which monitoring functions to run-in. Note that run-in is already in progress for a function, if it has [RI] written next to it. Only one run-in session is possible at a time, and it must be allowed to complete (or deliberately aborted) prior to starting another.

Selection of functions to run-in is done as follows:

Constance Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Discharge Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Min. flow Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Avg flow Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Peak flow Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Idle period Run-In	*No = Run-In deselected* *Yes= Run-In selected*
Rationing Run-In	*No = Run-In deselected* *Yes= Run-In selected* *Note the Rationing function is deactivated by default. If this functionality is desired, the function must be activated prior to starting run-in. This is done in the menu* ***System setup – Monitor Rationing,*** *in which the daily ration must be set to a nonzero value, e.g. 1,000 m3.*

Run-In part 3: "Time"
Finally, the run-in duration is set as follows:

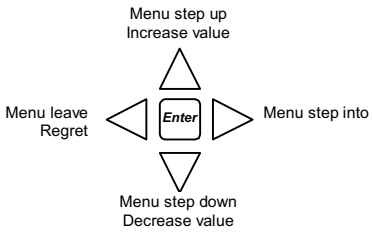
Remaining run-in time xxx days hh:mm

xxx days = Selectable 1 to 365 days

hh:mm = hours:minutes

Note that the longer the run-in duration, the more accurate the resulting alarm limits, which are derived from the resulting run-in measured values by adding a percentage of: 5+(300/run-in duration in days)%
However, for idle period, the percentage is subtracted, and the result further divided by two.

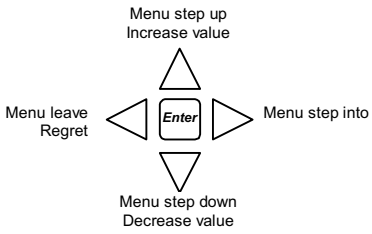
Recommended minimum run-in duration is 30 days.



Run-in commences once the remaining time is set. Run-In indications are remaining time is counting down towards zero; the Spec. Mon. indicator will flash yellow, and the Status display window indicates [RI].

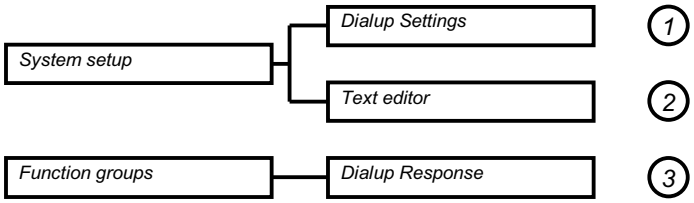
Run-in addendum:
Doing a monitor run-in without installing new alarm limits may be accomplished as follows:

The alarm limits for the monitors to run-in are set to 0.000, effectively disabling these functions. Next, run-in is started for the relevant monitoring functions. Once complete, the maximum values encountered during run-in may be inspected from the menu ***Factory Settings - Monitor Setup - RI/L and RI/H****.*
Alarm limits must now either be manually restored to their actual value prior to run-in, or new alarm limits based on the run-in results may be entered manually. Be sure to add a margin yourself! Note that with this approach, the selected monitoring functions are disabled during run-in, and after until alarm limits are manually set to nonzero values!

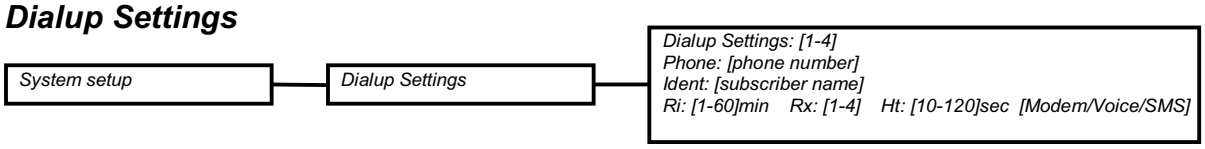


Telecommunication

An external modem for remote communication may be attached to the WLP-1 computer. For proper operation, the phone line feeding the modem should be a subscribed line that does not traverse any local exchange.
Setup is undertaken in three steps:



Dialup Settings

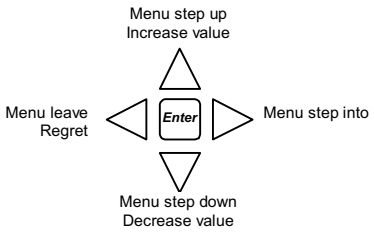


This item is used to set characteristics and preferences for up to four dialup targets. A plaintext identifier may be associated with each target. The setting of phone number and identifier is performed using the text editor as described above.

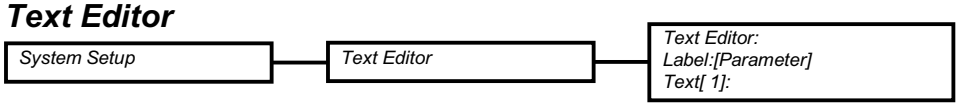
Dialup Settings:	*Select among targets 1 thru 4*
Phone:	*Enter phone number to call*
Ident:	*Enter a plaintext identifier for subscriber, e.g.: Janitor*
Ri:	*Interval between dialup attempts. Selectable from one to 60 minutes.*
Rx:	*Maximum consecutive attempts when call is unanswered.*
Ht:	*Minimum call duration. Selectable from ten to 120 seconds.*
Modem/Voice/SMS:	*Select expected answer type for connection: Modem for data connection, Voice for plain phone, and SMS pool for SMS gateway service (analog modem), or SMS v/GSM if the system is equipped with a digital modem.*

If the call is routed via a switchboard (PBX) requiring a prefix to obtain an outside line, the WLP can be directed to wait (W) for a new dial tone after the prefix thus:

0W63174500



Text Editor



Text editor lets you compose up to four callout messages for transmission to other technical equipment (printer, terminal) in a callout via modem session. Names/textual messages may be assigned to the following parameters:

System ID
AD Channel 1
AD Channel 2
AD Channel 3
AD Channel 4
AD Channel 5
AD Channel 6
AD Channel 7
AD Channel 8
Callout message #1 *(Text of callout-message no. 1, e.g.: Humidifier Leakage K5)*
Callout message #2
Callout message #3
Callout message #4

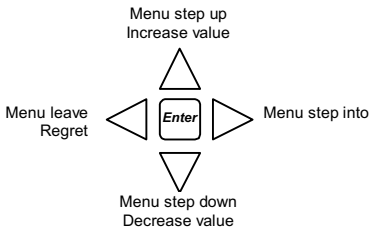
Names/text is entered using the arrow keys▽ △. You may erase all text from cursor position to end-of-line by selecting the symbol∏ and pressing▷ then ENTER.

E.g.: This is a demonstration
This is a demo∏stration [Press ▷ ENTER]
This is a demo

If you need space to insert text in a sentence, select the symbol➔ at the insert point, and press ▷ repeatedly until sufficient whitespace has been inserted, then ENTER.

Conversely, superfluous text can be removed by selecting symbol➔ at the rightmost end of the superfluous text, and pressing◁ repeatedly until the text is gone, then ENTER.

Eks.: This is a demonstration
This is a➔demonstration [Press ▷ ENTER]
This is a➔ demonstration
Conversely:
This is a ➔demonstration [Press ◁ ENTER]
This is a demonstration
Dette er en prøve på kommandoen



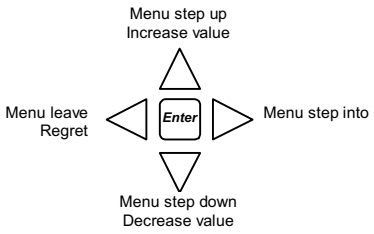
Dialup Response

Dialup Response governs phone callouts from the WLP-1 computer via modem. This menu configures, links, and prioritises phone numbers, messages, time windows and individual error response settings.
Four different dialup responses may be set.

Function groups — *Dialup response* — *Dialup Response [1-4]*

Dialup Resonse: [Selected]	
Message [-/1-4]: [Text]	
Dialup #[-/1-4]: [Ph.no. - identity]	
Alt #[-/1-4]: [Ph.no. - identity]	
Permit start: [hh:mm] on: [-------]	
Permit end: [hh:mm] on: [-------]	
ALR: AD channel 1	*[On/Off]*
ALR: AD channel 2	*[On/Off]*
ALR: AD channel 3	*[On/Off]*
ALR: AD channel 4	*[On/Off]*
ALR: AD channel 5	*[On/Off]*
ALR: AD channel 6	*[On/Off]*
ALR: AD channel 7	*[On/Off]*
ALR: AD channel 8	*[On/Off]*
ALR: Power Supply error	*[On/Off]*
	Mon: 1 2 3 4
ALR: Constance alarm (L)	- - - -
ALR: Discharge alarm (L)	- - - -
ALR: Min. flow alarm (L)	- - - -
ALR: Avg flow alarm (L)	- - - -
ALR: Peak flow alarm (L)	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: Constance alarm (H)	- - - -
ALR: Discharge alarm (H)	- - - -
ALR: Min. flow alarm (H)	- - - -
ALR: Avg flow alarm (H)	- - - -
ALR: Peak flow alarm (H)	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: Ration cutoff	- - - -
ALR: Idle period alarm	- - - -
ALR: Meter error	- - - -
ALR: Valve error	- - - -
ALR: not used	- - - -
ALR: not used	- - - -
ALR: not used	- - - -

The first menu selects the desired dialup response, from 1 thru 4, using up/down keys.
Once a dialup response is selected, the next menu is entered using arrow key ▷ .
This menu covers all settings for the selected dialup response.



The following items may be set:

Message transmitted by session.
Message [-/1-4]: [Text] *Selectable* *- = No message*
1-4 = Message 1 thru 4
Message is automatically displayed, and may be changed/modified using the text editor.

Primary phone number to dial.
Dialup # [-/1-4]: [Ph.no. - identity] *Selectable* *- = No dialup number*
1-4 = Dialup number 1 thru 4
Dialup number and identity are auto displayed and may be modified in the Dialup Settings menu.

Alternative phone number to dial.
Alt. # [-/1-4]: [Ph.no. - identity] *Selectable* *- = No dialup number*
1-4 = Dialup number 1 thru 4
Dialup number and identity are auto displayed and may be modified in the Dialup Settings menu.
The time interval(s) in which to use the primary phone number is set in the menu item below. Outside of this interval, the alternate number is used.

Permit start: [hh:mm] on: [–––––––] *Selectable [hh:mm] = 00:00 to 23:59*
Field on: [–––––––] = select/deselect weekdays monday thru sunday using▽ △

Permit end: [hh:mm] on: [–––––––] *Selectable [hh:mm] = 00:00 to 23:59*
Field on: [–––––––] = select/deselect weekdays monday thru sunday using▽ △

The list of alarm types ALR is used to activate/deactivate callout for each alarm type.
Selectable *On = callout*
Off = no callout

Please note that if the customer enters a textual measuring point identification for an AD channel, this will replace the AD channel designation in many menu windows.

Any leakage alarm type from any leakage monitors may be employed or ignored by the selected dialup response:
- = No response
Monitor number 1-4 = Response

Appendix

DANTAET
Electronics a/s

Højmevej 36-38
DK-5250 Odense SV
Tel: +45 63 17 45 00
Fax: +45 63 1745 01
dantaet@dantaet.dk
www.dantaet.dk
Giro: 4 49 32 22
A/S reg. no. 158240
SE no. 10 70 13 09

CE

EU-Overensstemmelseserklæring

ifølge retningslinierne 89/336/EØF og 73/23/EØF

EU Declaration of Conformity

in accordance with the following directives
89/336/EEC and 73/23/EEC

*DanTaet Electronics a/s erklærer hermed at **System WLP** er fremstillet i overens-stemmelse med ovennævnte direktiver samt i henhold til følgende standarder:*

*DanTaet Electronics a/s hereby declare that the **System WLP** has been designed and manufactured in conformity with the above Directives and in accordance with the following standards:*

EMC

Immunitet / Immunity
DS/EN 61000-6-1:2002, DS/EN 61000-6-2:2002

Emission
DS/EN 61000-6-3:2002, DS/EN 61000-6-4:2002

Sikkerhed / Safety

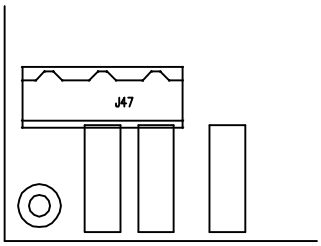
DS/EN 61010-1:2001

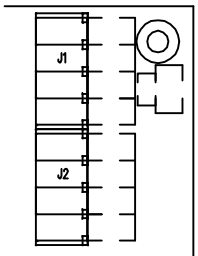
Det er en forudsætning at DanTaet Electronics a/s installationsvejledninger er fulgt.

It is on condition that DanTaet Electronics a/s guideline for installations is followed.

Odense, 7 februar 2003

Erik Nielsen
Adm. direktør / President
DanTaet Electronics a/s

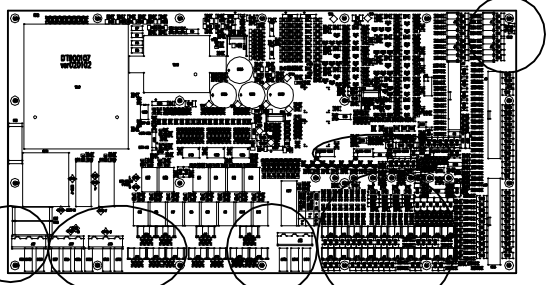


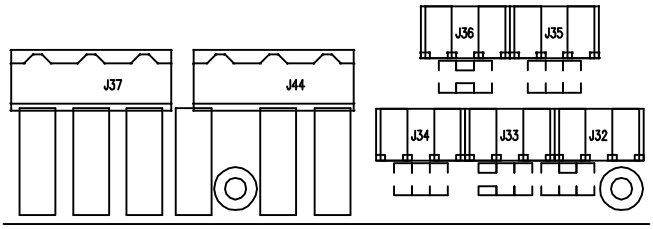


Meter inputs:
J1 Meter +12V
GND
Signal1 (Monitor 1)
Signal2 (monitor 2)
J2 Meter +12V
GND
Signal3 (Monitor 3)
Signal4 (Monitor 4)

Mains Power Supply:
J47 230Vac PE-N-L

WLP-1 main i/o board



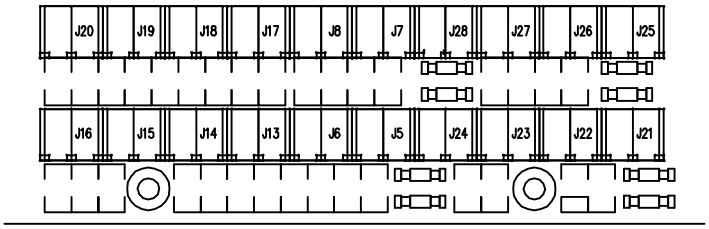


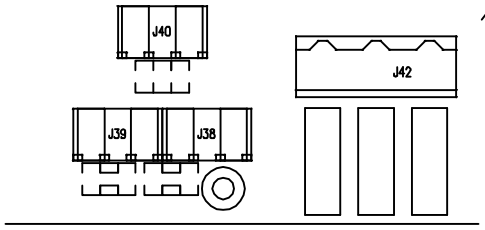
Valve outputs:
J32 24Vac L-N-P Cut-off valve relay 1
J33 24Vac L-N-P Cut-off valve relay 2
J34 24Vac L-N-P Cut-off valve relay 3
J35 24Vac L-N-P Cut-off valve relay 4
J36 24Vac L-N-P Drain valve relay 5
J37 230Vac L-N-P Cut-off valve relay 6
J44 230Vac L-N-P Cut-off valve relay 7

Configuration of digital inputs J5 to J8 by jumpers

Open collector or mechanical switch

External voltage drive 12-24V.





Digital outputs (Polarity -|+):
J13 Impulse Output Meter 1. Digital output Max. 24V
J14 Impulse Output Meter 2. Digital output Max. 24V
J15 Impulse Output Meter 3. Digital output Max. 24V
J16 Impulse Output Meter 4. Digital output Max. 24V
J17
J18 Leakage monitor suppressed (any monitor).
J19
J20 Tightness check in progress. Max. 24V

Analog inputs 4-20mA:
J21 -|+ AD channel 1
J22 -|+ AD channel 2
J23 -|+ AD channel 3
J24 -|+ AD channel 4
J25 -|+ AD channel 5
J26 -|+ AD channel 6
J27 -|+ AD channel 7
J28 -|+ AD channel 8

Digital inputs (External Control) (Polarity -|+):

J5 Assigned in Factory Settings. Max. 24Vdc
J6 Assigned in Factory Settings. Max. 24Vdc
J7 Assigned in Factory Settings. Max. 24Vdc
J8 Assigned in Factory Settings. Max. 24Vdc

Active/passive input mode selected by jumpers as shown above.

Alarm outputs:
J38 24Vac NC-COM-NO AR1 (unassigned)
J39 24Vac NC-COM-NO AR2 (unassigned)
J40 24Vac NC-COM-NO AR3 (unassigned)
J42 230Vac NC-COM-NO AR4 (unassigned)

DanTaet
Electronics A/S
Højmevej 36-38, 5250 Odense SV.
Tlf. 63 17 45 00 Fax 63 17 45 01
Email: dantaet@dantaet.dk

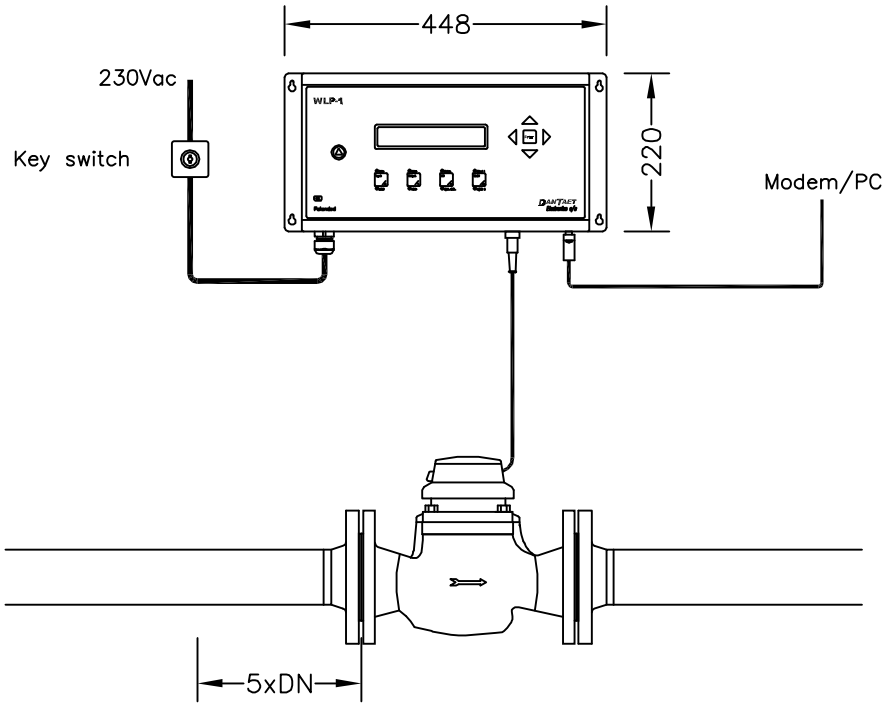
Comments

Electrical installation WLP-1

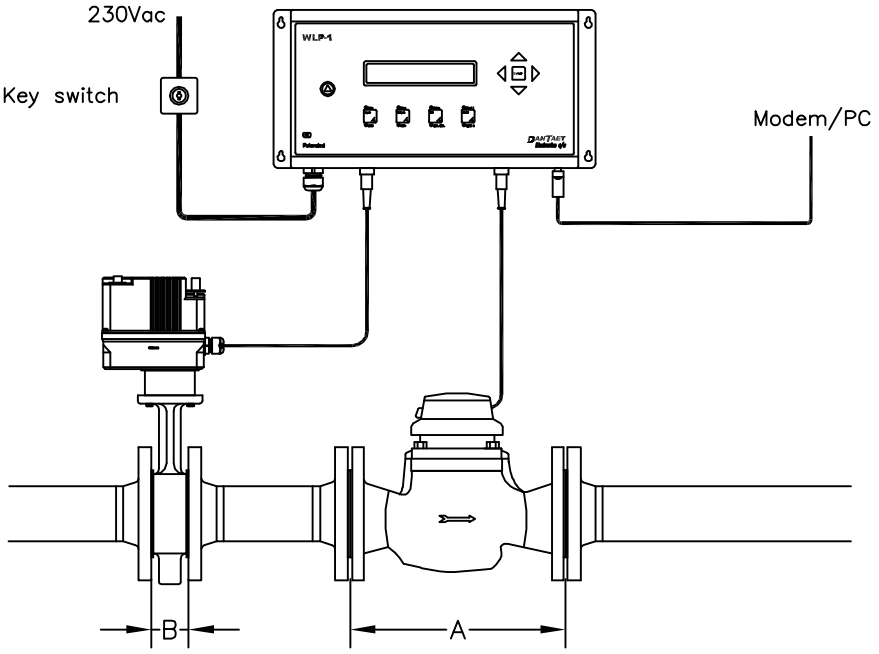
Inputs and Outputs

Description: WLP-1 main i/o board				
	Date	Oper.	Rev.: F	DrwDim: 1=5
Drwn.	07.07.05	SEG	404147	
App.	23.01.09	SEG	Drw.no.	

System type –V0



System type –V1



System:	Qn	Dim.	A	B
WLP–1–B20–V0	20	DN50	270	
WLP–1–B20–V1	20	DN50	270	43
WLP–1–B40–V0	40	DN65	300	
WLP–1–B40–V1	40	DN65	300	46
WLP–1–B55–V0	55	DN80	300	
WLP–1–B55–V1	55	DN80	300	46
WLP–1–B90–V0	90	DN100	360	
WLP–1–B90–V1	90	DN100	360	50

Instructions.
- Meters must be mounted horizontally.
- Meters and valves are connected to the computer by plugs.
- WLP–2 main supply is 230Vac
- Straight section of min. 3x pipe dia. before meter and no abrupt reduction in pipe size just behind the meter.
- Bolt holes on meters and valves meet ISO 7005

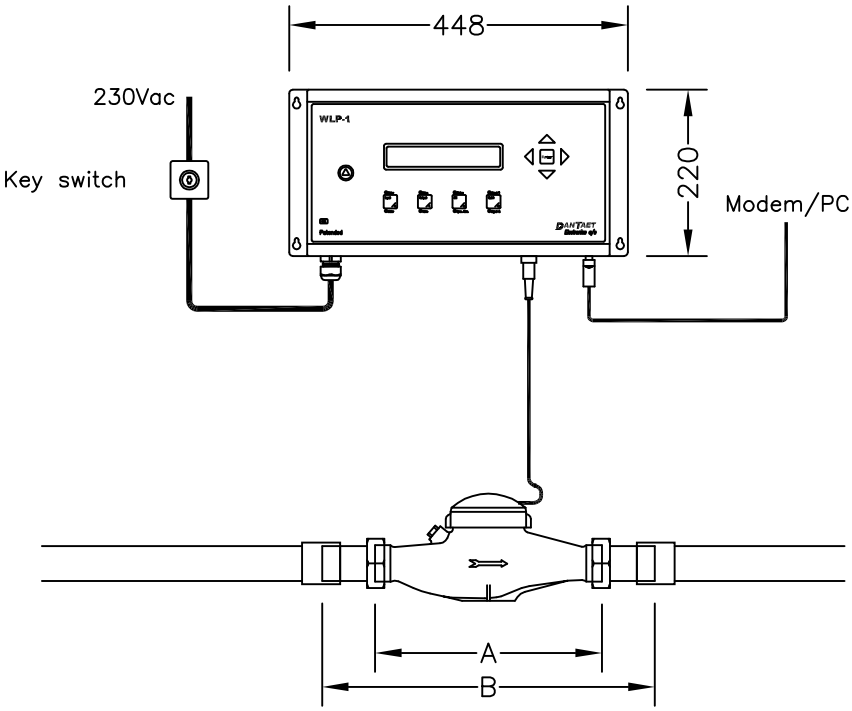
DanTaet
Electronics A/S
Højmevej 36–38, 5250 Odense SV.
Tlf. 63 17 45 00 Fax 63 17 45 01
Email: dantaet@dantaet.dk

Comments
WLP–1 Supply water
Woltman meters

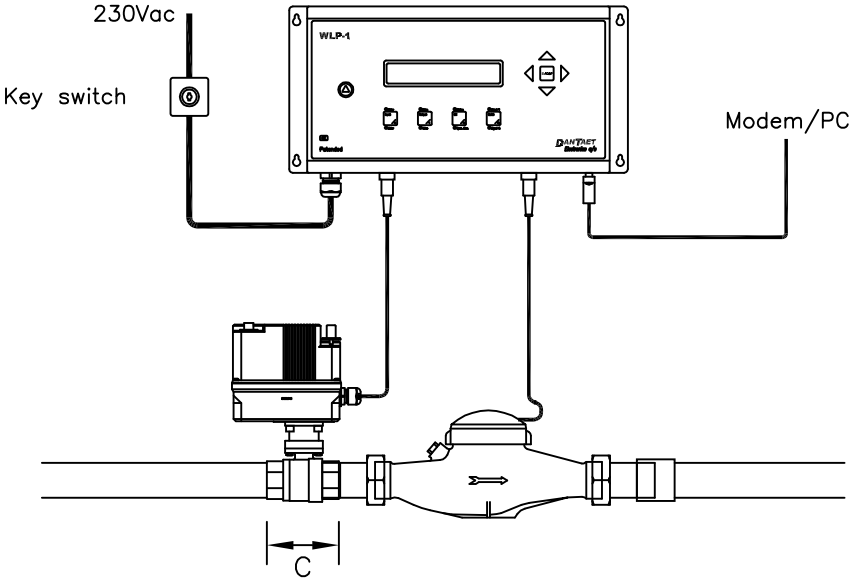
Description: WLP–1

	Date	Oper.	Rev.:	DrwDim: 1=10
Drwn.	040610	LRA	404148	
App.	040610	LRA	Drw.no.	

System type –V0



System type –V1



System type	Qn	Dim.	A	B	D
WLP–1–B2,5–V0	2,5	3/4"	220	318	
WLP–1–B2,5–V1	2,5	3/4"	220	318	80
WLP–1–B3,5–V0	3,5	1"	260	378	
WLP–1–B3,5–V1	3,5	1"	260	378	90
WLP–1–B6–V0	6	1.1/4"	260	378	
WLP–1–B6–V1	6	1.1/4"	260	378	110
WLP–1–B10–V0	10	1.1/2"	300	440	
WLP–1–B10–V1	10	1.1/2"	300	440	120
WLP–1–B15–V0	15	2"	300	460	
WLP–1–B15–V1	15	2"	300	460	140

Instructions.
- Meters must be mounted horizontally.
- Meters and valves are connected to the computer by plugs.
- WLP–1 main supply is 230Vac.

DanTaet
Electronics A/S
Højmevej 36–38, 5250 Odense SV.
Tlf. 63 17 45 00 Fax 63 17 45 01
Email: dantaet@dantaet.dk

Comments

WLP–1 Supply water
Multijet meters
Rev. 140407 / SEG

Description: WLP–1

	Date	Oper.	Rev.:	DrwDim: 1=10
Drwn.	040610	LRA	404149	
App.	040610	LRA	Drw.no.	